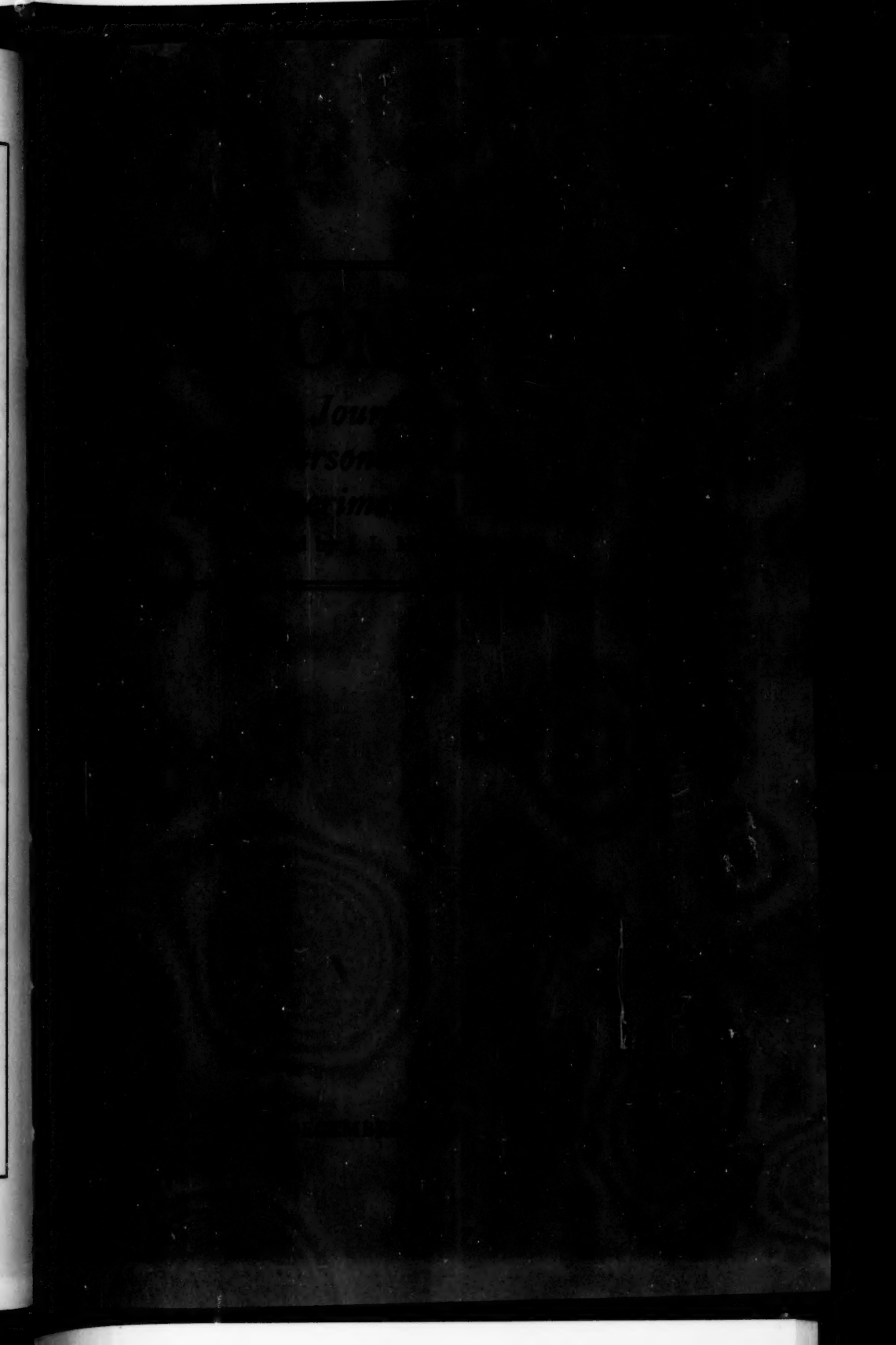

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AND

THE FUTURE EDITORS OF SOCIOMETRY

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PREFACE

A quarter of a century of sociometric endeavor has gone by. Hundreds of scholars—drawn from many fields of science, psychology, sociology, anthropology, psychiatry, education—have left a permanent imprint on sociometry. This volume comes at a turning point. A major era for sociometry is coming to a close, and a new era is dawning.

Some of the outstanding exponents of the field have assembled in this volume to a great "meeting of the minds". The book, as the reader shall have received it, has grown spontaneously. Yes, contributions were expected from those who have written for our volume. Yet, the fact that these contributions, once individually created, fell into a pattern, and became an organized whole, has been surprisingly incidental. Spontaneity and creativity may well have manifested themselves here inadvertently.

THE EDITOR

THE BIRTH OF A NEW ERA FOR SOCIOMETRY

Dedicated to the Occasion of the Transfer of SOCIOMETRY *to The American Sociological Society*

J. L. MORENO

MOTTO: *A new scientific truth does not triumph by convincing its opponents. By giving the idea away and making it anonymous others can discover it for themselves and feel about it as if it could be their own. As there is no one who can claim priority, everybody has it.*

I

When a young lady is twenty—which is the SOCIOMETRY journal's chronological age—it is time for an old-fashioned father to look for an appropriate suitor for her hand. The rapidly expanding American Sociological Society has many of the vigorous characteristics of the American male and was unanimously found to be the best suitor for the blushing maid. But whenever two get married, no one knows how it may turn out, unless he consults Burgess and Cottrell's *Prediction of Success in Marriage.*

II

A good time for meditation is the moment when an important decision is made. The passing of SOCIOMETRY into the fold of the American Sociological Society is such a crucial moment. I have been asked by many and then I have asked myself as to what urged me to do it. First I thought that the act speaks for itself, then I began to think that the decision might be clarified by an analysis of my own situation.

The best way to spread a novel idea is "to give it away". The worst way is to keep it for yourself, to hang on to it until it gets old and dry and dies with you. If it is a good idea it will catch on. Many will use it and become productive; they will pass the word and wider and wider circles will come under its spell. In this fashion an increasingly large number of people will catch on and use it also.

The risk the originator of the idea takes is that it may lose the identity with him and that he may be forgotten. Of course, he may want to be forgotten. It is a calculated risk. But he may live and see a few years later that the idea which he has started in obscurity and under great difficulties has become known everywhere and has become very useful. Then he can say to himself with pride: "This is my baby." But, of course, nobody may

know, nobody may recognize him as its creator. People may have forgotten him entirely. The height of irony may be reached if some begin to think that the idea had been imported from an obscure town in Siberia or that it has been borrowed from the Red Indians, deferring the credit from the discoverer to an imitator, similar to the well known myth that it was Amerigo Vespucci who discovered America, and not Columbus. If these things happen, that is a part of the bargain. He must keep a straight face and not contest erroneous opinions. He is like a mother who has given her child away for adoption immediately after birth. A good mother would not hurt the child by telling him that the people who adopted him are not his real parents.

It is a calculated risk also in another sense. It may be, for instance, that after years of silence, some curious people may discover the truth and will come and honor him. It is like the story of the prodigal son. The father does not expect him ever to return, but when he returns the greater is the glory.

The test of unselfishness and altruism is to give away the thing you love most if you believe that after separation from you it will prosper better than under your care. There is an ongoing contest in you between the glory of the idea and the glorification of yourself. After you have given it away, you may deplore your action. You follow up with anxiety how your idea develops in the hands of strangers and you get annoyed. They distort it, dilute it, ruin it. A retroactive paranoia sets in. Your narcissism reasserts itself. You attack the new parents, you try to influence their actions, you try to restore the past to regain recognition and recover your original possession. All these thoughts and emotions, although perfectly human, are bound to end in terrible self-torture, to hurt your well-meaning friends and to arouse public misunderstanding.

But giving away an idea has an economic side. An idea is often a form of property. If it is a machine it can be manufactured and sold, if it is a research design it can be standardized. The physical value of a property is in this case of minor importance, it is the intangible value of a scientific idea which matters. The giving away of property is an American custom. It is Americanism on the highest level. It is customary, in order to assure its universality, to give such property to a foundation, a university, a scientific society, but not to an individual.

III

When my decision became known, I was highly praised by some of my friends but violently criticized by others. Here follow some of the

comments: "This is the most generous thing to do" — "It is a wise decision" — "Sociometry has been a great contribution to that no-man's land of social psychology and sociology and I'm glad to see that the sociology boys have decided to move in and occupy the terrain which is not nearly so incognito as it was when you began to explore it over forty years ago" — "I know that this generous act on your part will long be remembered by social scientists whose interests direct their attention to the investigation of concrete social phenomena. They will recognize, as symbolized by your gift, the creativity that brought the Journal into being, the loyalty that kept it intact through the years of its development and your devotion to the idea that social life is orderly, regular, and predictable, and, consequently that it is subject to understanding by those who are prepared to discipline themselves in the use of adequate concepts and methodology" — "I"m glad that you always ran with the sociologists rather than the psychologists because it becomes increasingly apparent that the 'group factor' is much more important in understanding human behavior to say nothing of predicting it and controlling it than the orthodox psychologists and even the unorthodox ones like Freud ever imagined" — "I think your work and that of many other 'revisionists' has shown the basic error Freud made, failure to see the impact of culture, of group dynamics, upon so-called individual behavior" — "I think you made a wise and magnanimous decision for Sociometry" — "You have started a school of thought, the Journal SOCIOMETRY is considered its most important instrument; giving it away to a personally uninvolved group of editors may hurt the development of your methods and the growth of your school" — "You should continue as its Editor-in-Chief. There is no one who knows the field as well as you do" — "Is this to mean that you are turning away from sociometry, that you have ceased believing in its principles? — "There are rumors that the mystic inclinations of your youth are getting hold of you again" — "Is this a sign of creeping old age?" — "Is SOCIOMETRY a financial failure? Is it getting bankrupt and are you trying to pass it on before it becomes a heavy liability?"

These comments have come to me by letter or in vis-à-vis encounters and here are some of my answers: "It is immaterial in an ethical context how big or small an idea is — I believe that SOCIOMETRY will fare better in the years to come under the auspices of the American Sociological Society than it would have fared under my editorship — A school of thought, if it is of any worth, does not depend upon "possessions" like a journal or institute. It rests ultimately with the quality, the productivity and the number

of its pupils. Darwin did not edit a journal, but he did very well without it — There have been many turning points in the development of the sociometric movement. This is a new one but thanks to the cooperation of hundreds of co-workers, the field has become highly organized. A comparatively high degree of integrated productivity exists today which does not require my personal chairmanship of the Journal to that degree as it did even ten years ago — I used to agree with some articles only 75%, 50%, 40% or even 25%, but I printed them just the same — I found out that I am not infallible. — I am doing my best when I work alone or when my will prevails upon my aids — This is not the only way: I like to see teams of editors cooperating under pressure from all sides — My position at the helm of SOCIOMETRY may have become increasingly a block rather than a stimulus to its development — The sociometric movement should grow beyond its present limits and be a place for new methods and new techniques — The mystic inclinations of my youth have never left me — Against all contrary opinion, it is the religion with which I started which made me productive as a scientist. Religion is the spiritual soil upon which science grows best — the giving-away-act will free me for new objectives — Death in all its forms is a great liberator and catalyzer. It sets new forces free."

IV

The father of an idea has two concerns: the development and growth of his product and the future of his own productivity as creator and producer. SOCIOMETRY as a constellation of ideas has passed in the last twenty years through several crises, each requiring leadership to secure further growth; the crises were provoked each time by a change of the productivity of sociometrists, requiring an adaptation of the journal to it. The periods have been identified as hot or "therapeutic sociometry," cold or "diagnostic sociometry" and "perceptual sociometry." The first major crisis brought about a separation of diagnostic from therapeutic research and the creation of a second journal, *Sociatry* (later called *Group Psychotherapy*). A new major crisis has developed recently. This new phase may be called "international sociometry."

V

Whenever an important member of our social atom dies—father, mother, older brother, older sister, the woman we love, a close friend, the idea of death comes to our mind more strongly than otherwise. But the experience of "nearing" death does not come to one only when persons actually depart,

but often when we have to leave a house in which we have spent the best years of our lives, or whenever a separation takes place which is irrevocable. As life is lived, we are often placed before critical situations. We do not know in advance when one of our dear ones dies or when a calamity forces us to leave the town in which we have grown up. We have to face the calamity when it happens. No one knows in advance when the day of his death will come; no one can see the reactions upon the members of his family and friends, no one can experience his own death without being alive, no one can experience what will happen to him in advance. The best method of "pre"-integrating the potential futures into your self is working through several alternatives in a "psychodrama" of your future.

After having founded and nurtured SOCIOMETRY for twenty years, I had the itch to see how the journal would fare without me. For ordinary eyes, this seemed foolish. The journal was economically safe and well established, every one who knew the circumstances expected me to carry on until I die. But if I give it away during my lifetime, before I die, I can see (so to speak) the consequences of my death with my own eyes. I can see how my friends and enemies behave; I can enjoy the journal if successfully run; I can get angry at the people who made a mess of it; I can get angry at myself for having done such a stupid thing, very much like a highly dominating mother becomes very critical towards her daughter-in-law to whom she has given her son in marriage. I may page through every future issue of SOCIOMETRY with a sarcastic look, trying to find pitfalls and errors.

I recall an amusing incident which happened several years ago in a metropolitan city. An elderly bachelor had accumulated considerable wealth and as he thought the time of his death may be approaching, he decided to rehearse for it. He hired a public relations man to prepare his death carefully; he contracted a funeral director, a funeral parlor; arranged with all his relatives to come on the day set for his funeral, to attend it. The representatives of all civic organizations were invited. The speeches were rehearsed and recorded. A notable pastor was engaged to deliver the sermon; the best church in the city was hired. All this actually took place, and everything went on according to plan. He was declared officially dead; he listened to the evaluation of his life and accomplishments. It was broadcast so that it could be heard by the entire community. His last will was opened and the various gifts announced which he had decided to give to religious organizations, civic groups, scientific societies, friends and relatives. He himself was sitting pretty on a high place watching the funeral carriage with his casket and the row of automobiles of the mourners passing by.

The casket was lowered in one of the choice sections of the cemetery and a monument was erected in his behalf, surrounded by evergreen; the transcription read: "Here rests the man who died *twice*, once upon his own will, the second time upon the will of God." It turned out that this undertaking, which appeared queer to many, was a good investment. He was a very sick man but made a remarkable recovery after the funeral. It cured him from a deep fear of death. His "acting out of death" prolonged his life.

The strange actions of this man become meaningful in the light of our experiences gained from psychodramatic sessions. It is that a man can see with his own eyes some of the deep and unresolved problems of his future resolved on the stage with his aid, by the ones he fears and loves most. Thus the pathology of our future, like the pathology of our past can be treated successfully well in advance of the event.

VI

I have always been fascinated by the idea of anonymity and its impact upon behavior. Anonymity is to do something for its own sake without linking your name and ego to it. In my early youth I started in Vienna with a few friends a *House of Meeting*, a free guest house for all comers or needy ones. It was important that the donors remained unknown to the recipients. Anonymity, silence, goodness and charity were the principles upon which the modest enterprise was built. Later I decided to drop my name and publish my books anonymously. Anonymity is a radical deviation from the trend of our culture in which the linking of production for compensation to a particular individual is axiomatic. This derives partly from our enormously developed sense for propertied behavior—"That's mine" and "That's yours."

When I came to the decision immediately after the First World War (1918) to publish all my forthcoming German books anonymously, I faced a similar situation as at present. It was then, too, a voluntary demonstration of altruism. It seemed to me that in an increasingly ego-involved world the ones who are considered and expected to become leaders should not only give lip service to a code of ethics, but demonstrate it by a living example. The fact that many of my books (including *Das Stegreiftheater*) appeared anonymously produced a legion of private and social conflicts for me. Because of my reverence for truth, it had a great purging effect upon my outlook of life, an effect which still reverberates. I expected that act to have a similar effect upon the world at large, commensurate with its significance, but it was hardly noticed; the mills of God turn slowly and so the effect may still come.

The present case in which I am involved is similar in many respects. Science is anonymous. I have a well developed ego and self-concern; a good part of my dreams have been preoccupied with an intensive drive for recognition. On the other hand, however, a contrary force towards self-denial is prompting me to liberate and separate my work from my own ego and aspirations and giving it to the world without any strings attached. It is creating the position which every man will be in after he has departed from this world when he can look at himself with the most objective eyes, from there where nothing matters. The great difference is only that I wanted to establish this position for myself during my own lifetime, gaining this objectivity towards myself by an act of free will. It is obvious that there is here a relationship between the insistence of the Buddhist to attain nirvana in the midst of life, to die in spirit before he really dies, and gain emancipation of some part of himself at a time when he is at the height of his energy and not when he has come to the end of his tether.

VII

The process of decision-making was not easy because of the contrary forces in my own mind and because a society as large as the American Sociological Society has no ego of its own. It is a huge aggregate of people—individuals, groups and sub-groups full of conflicting aims. It is there to serve its members, not an idea. My life, on the other hand, being singularly devoted to an idea, seemed to be in utter contradiction to an uncontrollable mass of divergent strivings. Aware of the contrary forces in myself and in the American Sociological Society, I was for several weeks practically from day to day trying to find a solution to bridge over the difficulty of making a clearcut decision. I was simultaneously bombarded by the comments of well-meaning friends. I had to be my own counselor and to guide my own conscience. In this dilemma, I found on the other side of the fence a counter-ego representing the Society in its highest aspirations, a man of exemplary dignity and honesty. The debate with the many was reduced to the dialogue with *one*, an ongoing dialogue, face to face, clearly and humanly, from both sides, until the process of transfer was worked through and the present solution reached.

VIII

SOCIOMETRY is moving towards a new goal, the international field. Transferring SOCIOMETRY to the American Sociological Society started a new dynamic era for the journal; it saved the journal for the productivity within

the USA and made us free to create a new publication, *International,* for global problems.

The rapid development of sociometry, group psychotherapy and psychodrama throughout the world, reaching far beyond the academic centers and university laboratories into various fields of application, education, industry, administration, mental hospitals, religious institutions and government agencies, has made it necessary to check an uncontrolled development. Our investigations have shown that, although these methods have a universal core, they require adaptation to each cultural milieu. Sociometric Institutes are being organized in all countries which are open to democratic processes and the journal will be an international forum for publishing and exchanging views held by the various authorities in all parts of the world.

The aim of sociometry in its broadest sense has been to pave the way towards a "science" of democracy. We hoped that by starting with the systematic study of groups and communities in *statu nascendi,* the universal and optimal methods of a truly human social living—of what may appropriately be called "democracy"—will emerge.

The objective of *International* will be, therefore, to spread over the entire globe the science and methods of democracy and the courage to experiment with them.

PART I

HISTORICAL SECTION

THE SOCIOMETRIC SCHOOL AND THE SCIENCE OF MAN

J. L. MORENO

MOTTO: *Sociometry is the sociology of the people, by the people and for the people.*

For the first time in their history—between 1925 and 1955—, the social sciences in the United States of America have demonstrated "collective" originality. By this, I mean that the output of new theories, techniques, methods, types of measurement, are not the work of a single individual but a collective effort within a "favorable" social climate. This collective originality is frequently associated with the term and concept "sociometry" and "the sociometric movement".

The early American sociology was an "armchair science" (Howard W. Odum, *American Sociology*, p. 421, Longmans & Green, 1951). "At the turn of the century it featured the study of general society" (Odum, p. 422). Up to 1930 it had no attributes which differentiated it from the European trends in sociology, whether France, England or Germany. The turning point for an "indigenous" American sociology came between 1925 and 1935, coinciding with the official beginning of sociometry and with its many ramifications and supplementations since. The characteristics of the collective pattern of the new American sociology can be understood more clearly when seen in contrast to the preceding period. If one consults a volume, for instance, *"The Selected Papers from the Proceedings of the American Sociological Society,"* 1932, edited by Emory S. Bogardus, published by the University of Chicago Press, June 1933, containing contributions by some of the most distinguished sociologists of that era, and compares it with parallel and contemporary publications of that period (Gardner Murphy, *Experimental Social Psychology*, 1931, and J. L. Moreno, *Application of the Group Method to Classification*, 1932, *Psychological Organization of Groups in the Community*, 1933, forerunners of *Who Shall Survive?*, 1934) or if one compares the first year of the *American Sociological Review*, 1936, with the first year of SOCIOMETRY, 1937, one can see clearly the new and the old.

The old pattern had the following characteristics: a) philosophical methods of presentation; b) symbolic illustration of concepts; c) indirect and inferred manner of observation rarely giving concrete accounts of what takes place in a situation but preferring fictitious illustrations to concrete ones; d) demographic measurement.

The new pattern showed the following characteristics: 1) *new theoretical*

orientations: a) spontaneity-creativity, b) the "here-and-now", c) operational approach, d) topological psychology and field theory, e) interpersonal relations, f) role taking and role playing, g) inductive preparation of focal problems; 2) *concretism*—it deals with concrete groups directly, not only in a conceptual sense as Cooley with the "primary group"; it enters into them in order to find out what is actually going on within them; the locus of investigation is not only in the mind of the investigator but in the field or the laboratory; 3) *dynamism*—it explores the dynamics of group structure by means of sensitive instruments; they are so constructed that they can tap significant social processes and the changes taking place between individuals and groups. Illustrations of such instruments are: the sociometric test, sociometric rating, sociometric questionnaire, social distance scale, spontaneity test, interpersonal observation and interview, role test, sociodrama, situation test, group psychotherapy, etc. It pays special attention to the underlying socio-atomic patterns in addition to the formal patterns visible on the surface; 4) *measurism*—it introduces systematic methods to measure interpersonal and intergroup relations; it encourages operational definitions; it encourages hypothesis production stimulated by the behaviors and actions of individuals within a group setting, in addition to trying to demonstrate the validity of a priori hypotheses. It concentrates on tangible and focal studies. It insists on accurate sociometric scales and the use of realistic experimental designs. But unbridled "measurism" has become an exclusive trend within the sociometric movement; it is the result of the growing "splitting off" of the measurement portion from sociometry and neglecting the socius aspect. A survey of sociometric studies would show this: a drastic lack of imaginative theoretical preparation of an inquiry and a poor presentation of the material data. There is a danger that sociometry may become a branch of statistics. This tendency is frequently found among academic sociometrists. 5) *Interdisciplinarism* of investigations, convergence of all social sciences; 6) *systematism*—it encourages, openly or tacitly, the construction of systems on the basis of empirical and experimental evidence gained partly through sociometric research. Differences among sociometrists are due to conflict of systems rather than techniques.

In the early thirties, the number of workers moving into the new direction could be counted on the fingers of one hand, but, like the first birds traveling south indicate the coming of the cold season, they announced the coming of the new climate in the social sciences. It is secondary whence the priority of these new ideas, methods and techniques stem. The historian of the year two thousand will see the entire process more clearly than the

living who are directly involved. He may characterize it as a collective process, several-father-and-mother-pioneers, each with a different coloring, or describe it as an interdependent crystallization of a few inspiring conceptions around a leader. The only thing which we know with certainty is that it was between the covers and in the pages of the journal SOCIOMETRY where for the first time the galaxy of new stars appeared with their ideas before the public. The pioneering contributors belonged to all the departments of social science, psychologists, sociologists, anthropologists, psychiatrists and educators. The new medium was like a magnet, drawing them and pulling them towards an invisible, common goal.

The time has come to give main attention to the thing itself, to that which has been accomplished, however little this may be, and to the wide, untilled field of discovery and research which the future holds in its arms. The term and concept which held them together in the first period was *"sociometry"* which still expresses the common objective better than any other term. This term has had several overlapping meanings but the common core of all meanings was sufficiently strong to justify talking about the sociometric movement and considering all those who participated as sociometrists. The term "sociometry" with its two roots, socius-structure of the group, and metrum-measurement, defined beyond any doubt that here was attempted the combination of the two up to then irreconcilable opposites, *the direct study of groupal and structured dynamics,* in which social, cultural and psychological factors are interwoven, and their *measurement.* Looking backward, it seems natural that even within the sociometric movement itself, separate cliques should have emerged, trying to identify themselves by different terms like group dynamics in the middle forties, small group research in the early fifties. The "objective" question, however, is whether anything is gained by these additional terms. Are they to be substitutes for the term sociometry, do they cover a new ground which is not covered by sociometry or are they just transitory climates of emphasis? It is interesting to read in this context Ernest Burgess' now classic assessment "Research Methods in Sociology" which appeared in the *American Journal of Sociology,* 1944, and in which he placed the various developments connected with the names of Emory Bogardus, Lloyd Warner, Kurt Lewin, etc. as characteristic for the new trend within the section "sociometry", indicating that they are characteristic parts of the sociometric school.

Sociometrists have emphatically sponsored the use of operational definitions but terms like positivism and operationism do not cover the new trend in the social sciences for these terms are used by its sponsors in a

universal sense relative to "all" sciences. Their particular deficiency is that they do not express in themselves the concept of group as well as measurement which are essential parts of the movement. It is obvious that a unique term was required which adequately expressed the process in the making. Sociometry was best fitted to express this uniqueness. It was and still is important to stress that there is no aspect of social relations which is not measurable, at least to a degree.

Sociometric techniques are now universally applied, especially sociometric tests, psycho-sociodrama and role playing techniques. The battleground is sociometric theory. The conflicting views about sociometry stem largely from the fact that the theories related to the various methods and techniques are not shared by all sociometrists. There are at present several value systems struggling for supremacy in religion, philosophy, politics and in the natural sciences, a condition which reflects also upon the social sciences and sociometry. But a school of thought cannot survive unless the value system to which it consciously or unconsciously adheres is spelled out and openly scrutinized. The application of sociometric and sociodramatic techniques will vary greatly, depending upon whether they are used in a Catholic, Communistic, cooperative or democratic world. The value systems which spur an investigator in his research cannot be permitted to remain his private affair.

The sociometric school consists of several branches, spread throughout the world. They rarely hang together officially—the outstanding characteristic of the movement is that it developed like a huge interpersonal network carrying chains of influence from one informal clique to another, from the key individuals of one university to the key individuals of other universities, but they are natural parts of a logical development. The basic concepts and techniques introduced by sociometrists between 1932 and 1937, 1937 marking the foundation of the journal SOCIOMETRY and between 1937 and 1942, 1942 marking the opening of the Sociometric Institute have been maintained with secondary modifications by practically all organizations which sprang up since in the United States or Europe. But they have been modified, further developed and brought to greater clarity through their application to special fields of research and at times oversimplified and diluted. Sociometry has been fortunate in having caught the active interest of a large number of talented scholars from all departments of social science. Their contribution was often not in the volume of papers but in their quality.

The basic problems of sociometry have a long philosophical and sociological tradition. The old theories have been refocused and rediscovered.

They have been rephrased in a dynamic, modern language. The methods, by means of which the old aims are pursued, are new.

1) *The Aim of Sociometry*—The aim of sociometry is to help in the formation of a world in which every individual, whatever his intelligence, race, creed, religion or ideological affiliations, is given an equal opportunity to survive and to apply his spontaneity and creativity within it. The aim is to be pursued through revolutionary action. The psychiatrist may evaluate it as a "therapeutic society" engulfing all mankind, a sociologist might evaluate it as well integrated "cooperative" society in which all parts, small and large, are functioning harmoniously, so as to give all individuals a share in living and in pursuit of socially constructive aims. Such a "value" is Utopian as long as the enterprise is started with the end-stage trying to transform entire communities or the entire mankind by means of a single revolutionary scheme, but it is plausible and attainable if the experiment is begun from the grass roots up with the social atoms and gradually carried further by developing the sociometric consciousness of the people.

2) *Sociometric Method*—Sociometry was the first to make systematic use of the people being studied, getting the guiding clues from them for the study of their own group or community. It was an important methodical discovery that the people studied can be made to be the crucial experts and investigators of any social setting of which they are a part. In sociometry, as well as in socio-drama, the interrelated individuals furnish the major clues which are then carefully followed up in cooperation with their investigators. Hence comes our motto which should be written as an epitaph over every sociometric and sociological laboratory: "Sociometry is the sociology of the people, by the people and for the people". Sociometric method has been described several times during the first period of the sociometric movement in *Who Shall Survive?*, 1934, in SOCIOMETRY, Volume I, No. 1, 1937, "Sociometry in Relation to Other Social Sciences", pp. 206-219, and in "Foundations of Sociometry", 1941, SOCIOMETRY, Volume IV.

3) *Sociometric Categories*—The initial effort of sociometry was to take and redefine concepts like universe, spontaneity, creativity, adequacy, tele, social atom, attraction, repulsion, choice, interpersonal contact range, warming up, self-realization, catharsis, intuition, role, group, cohesiveness and therapeutic change out of the class of mystic notions and transfer them into the class of concepts which can be operationally defined, measured and validated. This aim has been partly accomplished in the course of the last thirty years but an enormous amount of work has yet to be done.

The sociometric categories which have received the widest acceptance

are: (a) adequacy or mastery, (b) creativity, (c) spontaneity, (d) interpersonal or contact range, expansiveness, (e) tele or telic sensitivity, (f) self realization or autonomy and (g) catharsis of integration.

(a) Adequacy or mastery. In my definitions of spontaneous behavior, I preferred the reference to adequate or masterful responses instead of to appropriateness and/or competence. Appropriateness implies obedient, obliging, conforming and adjusting behavior—competence implies technological efficiency and mechanical skill.

Mastery or adequacy of conduct has had convincing historic illustrations among famous personages like Jesus, Buddha, St. Francis and innumerable individuals of all times who obviously remain unknown or anonymous. It is essentially an autonomous achievement but rarely through self-analysis, most frequently through self-realization in life. The individual lives through numerous roles and situations, internal or external, and demonstrates his mastery in them. The recluse who lives in isolation may have attained a limited mastery and containment, but his final test is when he reenters life and comes into contact with other beings. Mastery has to be proven in the thick of life, not apart from it.

(b) Creativity. See this volume, p. 109.

(c) Spontaneity. See this volume, p. 108.

(d) Interpersonal or contact range, expansiveness. See this volume, p. 114.

(e) Tele or telic sensitivity. According to telic theory, the development of telic sensitivity is closely linked with the matrix of identity and the development of the cerebral cortex (see in this volume, p. 147). As maternal figures and infant slowly grow apart and the identity pattern weakens, telic reciprocity steps in and operates as the residual function. Telic reciprocity proposes that A and B are an interactional, cooperational unit, that they are two parts of the same process although occasionally at different points in space and time. Telic sensitivity is, therefore, a two-way process, sensitivity of the parts "for one another": it is by experience mutual and reciprocal, what benefits one benefits the other. It is productive because it is both ways and continuous. It can be compared with "tele-phonic communication". Empathy is a telic fragment which emerges in the course of individuation and self-integration. It proposes that A and B are separate individuals, they are acting side by side. It is a one-way process, sensitivity which *one* has for the other. In empathy, cognitive characteristics are in excess of the conative ones.

Telic reciprocity is the common characteristic of all encounter experience.

It is the intuitive "click" between the participants—no words need to be spoken between mother and infant or two lovers. An intimate feeling envelops them, it is an uncanny sensitivity for each other which welds individuals into unity. In genuine love relations the partners share each other's cleverness as well as each other's limitations. Love is a telic relationship.

In life itself we are expected to be sensitive for the feelings of the person with whom we are interacting at the time. Watching the behavior of partners and putting ourselves into their situations, mentally reversing roles with them, we are continuously getting clues how they expect us to act. In turn, we are giving them clues how we expect them to act. In many of the stereotype and humdrum situations of life, it is insensitivity of partners for clues in significant situations which lead to serious interpersonal conflicts often difficult to repair.

The relation between therapist and patient, whether in individual or group psychotherapy, requires telic sensitivity. It is tele which establishes natural "correspondence" between therapist and patient. It is an absence of this factor in professional therapeutic relations which is responsible for therapeutic failures; it must be regained in order to make any technology work. Transference of the patient may relate him to a person who is not there; in return, counter-transference may relate the therapist to a person who is not there. The result is that they talk past each other instead of to each other. Similarly, empathy and counter-empathy do not add up to tele; they may run parallel and never mix, that is, never become a telic relationship.

An individual with empathic sensitivity is able to penetrate and understand another individual, but this experience is possible without mutual love. If one partner empathizes with the other, he may be able to take advantage of her, be injurious or make her dependent upon himself because of his sheer ability to use his "empathic cunning". This is why training of empathic ability as in the case of psychopathic individuals frequently leads to the opposite of what is expected. Just because they are able to feel themselves into the thoughts of their victim, they may become better equipped for their criminal plots. It is reported by his biographers that Adolf Hitler[1] was endowed with a high degree of empathy, but he used this talent to hurt rather than to help his associates. Empathy, like intelligence, therefore, can be used for social as well as for anti-social ends.

(f) Self-realization or autonomy. See this volume, p. 105.

[1] Heiden, Konrad: *A History of National Socialism*, 1935, Alfred A. Knopf, New York.

(g) Catharsis of Integration. "Mental catharsis is here defined as a process which accompanies every type of therapeutic learning, not only a finding of resolution from conflict, but also of realization of self, not only release and relief but also equilibrium and peace. It is not a catharsis of abreaction but a *catharsis of integration.*"[2]

4) *Sociometric Techniques*—All techniques are sociometric which are structured with the purpose in mind to further sociometric experiments. Their target is either a single community or a chain of communities. The sociometric test and the sociometric experiment of a community are two different things. The sociometric test is a technique of social measurement, the sociometric experiment is the study and gradual transformation of an entire community in accordance with its needs, using sociometric techniques. The spontaneity of the choice process in a sociometric test can become deteriorated to such a degree that the natural process of regrouping takes a *pathological* turn or comes to an apparently incorrigible, dead end. Sociometric tests executed in prisons and reformatories revealed that the highest number of choices were regularly given to individuals who had made an outstanding record in anti-social activities and that the individuals who had reformed or wished to reform remained unchosen or were rejected by the majority. It became clear to sociometrists that unless this process could be reversed, the introduction of a corrective value system would be an impossible task. Whenever two value systems are in conflict, a progressive and a reactionary one, the sociogram of the community will reflect it; in order that the new values should prevail, a sociometric and sociodramatic re-education of the isolated and rejected individuals has to be undertaken; they, in turn, may undertake the re-training of the rest of the community.

The question as to the validity of the sociometric test has aroused considerable controversy in the course of the years. There have been two contrary opinions, one emphasizes that "the usual measures of reliability and validity do not seem to be particularly appropriate for sociometry. If each individual discloses his preferences on a test honestly, the test is perfectly reliable and valid" (Northway). The second one is that the current methods of measuring validity can be applied to the sociometric test. The two opinions do not exclude one another. It is accurate to say that the validity of the sociometric test does not require proof. It is a statement of the persons themselves, what they want at a certain moment in respect to a given activity. The sociometric test deals with primary acts and bits of behavior and not

[2] From my article "Spontaneity Theory of Learning" in Robert B. Haas' *Psychodrama and Sociodrama in American Education,* Beacon House, 1949, p. 7.

with "factors" like intelligence, gene, or any other hidden factors. It does not make a choice more honorable because it is statistically valid. There is no need for validation as long as the members of the group and their behavior are taken as they are expressed in the *present* tense and as long as no pretense is made that the future behavior of the participants can be predicted from the events or choices which have been made or that generalizations can be drawn from whatever the events recorded. But one can state with certainty that what matters is that the choices and decisions are valid for the participants themselves at the time when they are made. In such a case, one may talk about an *"existential" validation,* and it should be definitely separated from *scientific validation.* But when one thinks of existential validation, one should not think that this must be an impulsive and irrational kind of behavior. It may be behavior of the highest and well organized kind. Frequently, when psychotherapeutic or religious groups claim that what they are doing is valid, they confuse existential with scientific validation.

The sociometric techniques are divided into (a) group techniques and (b) action techniques. Group techniques like the sociometric test, the acquaintance test, the sociometric questionnaire and the sociometric-perception test in widely varying modifications have become a part of the normal armamentarium of the social scientists. Action techniques like the spontaneity test, the role playing test, the situation test, psycho- and sociodrama, role reversal, double, mirror, soliloquy and others are becoming in the last decade increasingly popular and their appreciation even beyond that of the group techniques can be anticipated (action research).

5) *The Sociometric Experiment*—The objective of *Who Shall Survive?* was to describe a sociometric experiment and not merely to introduce a number of techniques. The first sentence in the book "A truly therapeutic procedure cannot have less an objective than the whole of mankind" indicated my intention. It is disconcerting that this has been so completely misunderstood although in writing the book I have put this idea straight under the nose of the reader. It is stranger yet that this sentence is the most frequently quoted phrase of the book and that still its meaning has rarely been appreciated. To demonstrate the idea, the book analyzes and enfolds an entire community and tries to turn it from an untherapeutic community into a therapeutic one—within the limits of its setting—by means of various methods. It appears that for many this sentence has been taken at best as a poetic metaphor for an ailing society and gently pushed aside. As a consequence, the immediate meaning of the entire book has been overlooked.

I had announced this prospect shortly before I started the Hudson experiment: "I looked at the community as a whole and saw disclosed then in the plainest form the workings of our society, each individual following his longings, each willing the best, but the whole thing going wrong. If every person of our society should reach the perfection of a saint, the saints would interact very poorly because it takes something else beyond individual perfection to make two saints or a group of saints compatible and productive. Now here lay the problem of a *therapeutic society*" (1932). The principal task of the experiment was to initiate a therapeutic process which involves the entire community, not only the so-called "inmates", but the entire staff, from the superintendent down to every teacher, social worker, minister, clerical worker, farm worker, manual laborer, chauffeur, carpenter, electrician. The old adage "Physician heal thyself" was replaced with a new one, *"Community heal thyself"*.

It does not make any difference which set of values dominates the community when the sociometric experiment begins. Whether the set of values cherished by the inhabitants have a religious, therapeutic, cooperative or political orientation, or if any other yet unknown ideology prevails; if the experiment is carried out by skilled sociometric investigators with the full participation of the inhabitants, using the sociometric method as a guide, the outcome will always be clarifying and beneficial. The end product, the resultant community may appear therapeutic to the therapist, religious to the religionist, cooperative to the cooperativist, communistic to the communist, democratic to the democrat.

6) *Sociometry of the Community*—Hypothesis I. There is to every official and formal structure of a community an informal, sociometric matrix. This was an important discovery, not because such a cleavage was not always suspected, but because sociometric method permitted a precise investigation and demonstration of the cleavage. Hypothesis II. Social conflict and tension increases in direct proportion to the sociodynamic difference between the two matrices. (*Who Shall Survive?*, p. 70, 1934, First Edition, and "Sociometry in Relation to Other Social Sciences", SOCIOMETRY, Vol. 1, 1937, pp. 212-215.) The phenomenon of this fundamental cleavage was rediscovered by Joan Criswell ("A Sociometric Analysis of Negro-White Groups", *Sociometric Review*, 1936) and further explored by numerous investigators, George A. Lundberg and Mary Steele ("Social Attraction Patterns in a Village", SOCIOMETRY, Vol. I, 1937, No. 4, p. 375), Shepherd Wolman ("Sociometric Planning of a New Community", SOCIOMETRY, Vol. 1, No. 1, 1937, p. 220), Charles Loomis ("Sociometrics and the Study of New

Rural Communities", SOCIOMETRY, Vol. 2, No. 1, 1939, p. 56), Lloyd W. Warner and Paul S. Hunt (*The Social Life of a Modern Community,* Yale University Press, Vol. I, Yankee City Series, 1941). For sociometrists the cliques and informal groups were only the "raw" materials from which more detailed and specific structures were deduced. Hypothesis III. Every community consists, besides of the primary groups, of primary "structures" as social atoms, social molecules and interpersonal network. In primary structures, certain links are unacquainted with those in more distant links but can exert an influence by indirection (SOCIOMETRY, Vol. II, 1939, p. 2).

7) *Sociometry of Communication*—Hypothesis IV. Immediate communication, from individual to individual, is the most influential form of communication. It is different from the communication effects of mass media; it is the matrix upon which the communication of mass media are based. The growing field of interpersonal communication is based upon sociometric principles. Hypothesis V. The apparently inconsequential character of immediate relations between individuals have a powerful, *distant* effect upon the behavior of individuals far apart from each other. It affects their conduct in their homes, their workshops, in their racial and sexual collectivities, etc. It was the discovery of the interpersonal, sociometric network which opened our eyes by showing us concretely, as if under the microscope, the far-reaching and cumulative distant effects of immediate interpersonal events. (The discovery of the interpersonal network has been first described in *Who Shall Survive?,* First Edition, 1934, pp. 256-265.) Through a study of runaways and the spreading of news and rumors they have been classified in the following words: "These networks are the kitchens of public opinion; it is through these channels that people affect, educate or disintegrate one another. It is through these networks that suggestion is transmitted" (p. 265). "The cause for their existence is the economic principle of producing the greatest effect with the least effort" (p. 261). The next important demonstration of the influence of sociometric networks was the study of rumors and the analysis of the mass purges in Soviet Russia. ("Foundations of Sociometry", 1941, SOCIOMETRY, Vol. IV, No. 1.) Hypothesis VI. The stars or key individuals, also called opinion leaders, play the part of catalyzers and ferments in the interpersonal networks of communication. The exponents of development in this area have been Lazarsfeld, Lundberg and Stewart (Paul F. Lazarsfeld and Hazel Godet, "Who Gets a Job?", SOCIOMETRY, Vol. IV, 1941, No. 1, pp. 64-77; Frank Stewart, "A Sociometric Study of Influence in South Town", SOCIOMETRY, Vol. X, 1947, pp. 11-31, and pp. 273-286; George A. Lundberg, "Marketing and Social Organization",

Charles Coolidge Parlin Memorial Lecture, May 15, 1945; Robert K. Merton, "Patterns of Influence: A Study of Interpersonal Influence and of Communications Behavior in the Local Community", in Lazarsfeld and Stanton, *Communication Research,* Harpers, 1948-1949.)

8) *Sociometry in Education*—The widest application of sociometry has been in education. The leading exponent in this area has been Helen Jennings, by polishing and adapting them to school situations and advocating their application (*Sociometry in Group Relations,* A Work Guide for Teachers, American Council on Education, Washington, D. C., 1948). Close seconds to Jennings have been Mary L. Northway, of the University of Toronto, Institute of Child Study, (*A Primer of Sociometry,* University of Toronto Press, 1953) and Merl E. Bonney, North Texas State College (*The Bonney-Fessenden Sociograph,* California Test Bureau, 1955).

9) *Sociometry in Industry*—Interpersonal relations operating in an industrial situation are relevant to productivity. Hypothesis VII. This discovery was made during the study of the Hudson workshops (*Who Shall Survive?,* 1934, pp. 112-120). "They (the individuals) reject each other in the steam laundry, their work assignment. But in this situation their hostile interaction towards each other had the most upsetting effect upon the work process and the cooperation of the group as a whole, a few times bringing the work to a standstill." Roethlisberger and Dickson continued and supplemented in their Hawthorne experiments the discovery made in Hudson. Since this discovery was made, industrial sociology has repeatedly demonstrated the functional link between interpersonal relations, group structure and productivity.

Hypothesis VIII. Accident proneness in industry is a function of the sociometric status of the worker (see *Who Shall Survive?,* 1934, p. 112). Studies by Speroff and Kerr reported that: "Accident proneness is inversely correlated with choices received" (B. Speroff and W. Kerr, "Steel Mill 'Hot Strip' Accidents and Interpersonal Desirability Values", *Journal Clinical Psychology,* 1952, 8, 89-91).

10) *Sociometry in the Armed Forces*—The importance of interpersonal relations in formal organizations, as family and industry, was first pointed out by means of sociometric analysis in *Who Shall Survive?* Shortly after, it was also pointed out for the armed forces (J. L. Moreno, "The Advantages of the Sociometric Approach to Problems of National Defense", SOCIOMETRY, Vol. IV, 1941, pp. 384-391; Leslie D. Zeleny, "Selection of Compatible Flying Partners", *American Journal of Sociology,* LII: pp. 424-431, March, 1947; John G. Jenkins, "The Nominating Technique as a Method of Evalu-

ating Air Group Morale", *Journal of Aviation Medicine*, Vol. 19, No. 1, February 1948, pp. 12-19). This discovery was made again by Jenkins in the armed forces under interesting circumstances; the problem was the social structure of air groups and "picking good combat pilots", in 1944, "so we took the idea of the sociometric diagram, developed originally by the sociologist, Moreno, and plotted our available air groups according to his techniques". The value of sociometric methods for the development of morale and combat ability led to the special Army Regulation 600-150 "Overseas—Four Man Team Replacement, 1953" (Effect on Morale of Infantry Team Replacement and Individual Replacement Systems", D-15-223-(00) by Personnel Research Branch, PR and P Division, TAGO, *Research Memorandum* 53-26, August, 1953). Upon my suggestion the accident proneness hypothesis was followed up in the armed forces. The findings relating sociometric choices to accident proneness in industry were confirmed in military studies: "Measurements involving sociometric choices constitute useful indicators of future military proficiency." (Jane Srygley Mouton, Robert R. Blake and Benjamin Fruchter, "The Validity of Sociometric Responses", SOCIOMETRY, Vol. XVIII, No. 2, 1955.)

11) *Reductionism in the Sociometric Research Design*—We justly criticize theories which refer the explanation of human behavior to a single cause as sexuality or survival of the fittest or identifying complex patterns of behavior, for instance, of the human adult with that of infants or animals. But we are paying little attention to a similarly grave error—the tendency towards reductionism in research design. The "ask a (sociometric) question" trend is one such fallacy—it has become a widely spread movement, this "asking a question" fad hoping that an adequate answer will be forthcoming. Sociometrists made the important discovery that the grouping of any individuals, even of total strangers, has some degree of structure. It is however not altogether surprising; even if they do not know one another, they belong to the same culture and speak the same language; even if they do not speak the same language, there are non-verbal varieties of communication: eye and ear, sign and signal, gesture and physical contact. It was certainly comforting to find out that asking a sociometric question of any group, even a motley of strangers, revealed a minimum sociometric structure of this group, significantly above chance. But this in turn has led many investigators to neglect the consideration of the motivations of the participants and their telic sensitivity. A tacit assumption developed: that there is a fairly reliable universality about sociometric responses and that, for instance, in the process of equating groups of controlled studies, asking sociometric questions of the

participants who are unfocussed and unwarmed up is sufficient. This tendency to reduce sociometric questionnaires to the level of public opinion questionnaires is a deplorable regression in sociometric research morale. Lazarsfeld et al. pointed out that even in public opinion questionnaires, interpersonal relations and warm up to the substance of the question is of utmost significance.

It is a common trend in the technique of research design to replace a complicated technique by a simple one if the results are of equal valence, for instance, it would be an accomplishment to replace a criterion-linked sociometric test by a simple question or a complicated role playing test by a casual conversation among unselected strangers. But this has never been proven, and it is not probable that it will. Meanwhile a laxity has developed. Similar to the "ask a sociometric question" fallacy, what may be called the "role playing" fallacy is widely practiced. A number of people are placed together to start a conversation about anything they want, trusting tacitly that also here, because of certain universal, conserved trends in human behavior, something significant will come out of the conversation revealing typical trends of interaction, at least sufficiently interesting to discuss the various hypotheses and hunches and apply one's statistical skill in the analysis of the data. Now there is no question that, in accord with psychodramatic tenets, entirely unrehearsed dialogues between totally unselected ensembles of strangers are often revealing. I have found this even to be so when the medium of conversation was "nonsense language" and observing actors engaged in a conversation through a screen can be useful as an item in a systematic role playing research. But standing by itself, it is not only meaningless but it reduces its participants to guinea pigs. The virtue of role playing tests is to arouse the spontaneity and adequate participation of the actors to a maximum.

Concerning Criticisms of Sociometry and the Sociometric Movement

Motto: *Everyone is a prophet in his own book but no one is a prophet in the book of the other.*

I take this opportunity to answer a number of criticisms which have been made of sociometry and the sociometric movement in the course of years. As some of the more important criticisms have been directed at me and my work, I will use them as the frame of reference for my comments. I have been the object of the highest praise as well as of violent disapproval and of many shades between these two extremes. Because of the wholesale identification of hundreds of other investigators with my own immediate

work, I will take the opportunity to clarify also their own position in the field in a few cases although I am certain that many will do it for themselves, and better than I could. Therefore I will select from the various criticisms of sociometry a number of typical reviews.

I refer to *The Study of the Primary Group,* by Edward A. Shils (Daniel Lerner and Harold D. Lasswell (eds.), *The Policy Sciences,* Stamford University Press, 1951, pp. 44-69. I would like first to make a few corrections of facts. Shils reports that (a) the sociometric test, in my original opus, was limited to the positive choice process (p. 52, op. cited). Actually, it included negative choices as well as indifference responses; I insisted on the total attraction-rejection-indifference assessment for defining an individual's sociometric status (*Who Shall Survive?,* p. 78; all references are made from the First Edition, 1934). (b) He reports that the original test was limited to five choices (p. 52, op. cited). Actually, the technique used in one research two choices (pp. 13-28)—in another, five choices (pp. 69-96); and it was suggested that the spontaneity of the individual should go to the limit; I insisted (p. 94) that "the ideal conditions for this experimental study should provide for unrestrained exercise of choice". (c) Contrary to Shils, it is in the course of these studies that the "acquaintance volume", the "emotional expansiveness" of each person was discovered (pp. 134-141). (d) He gives the impression as if the only method of recording used was a sociogram. Actually the sociogram was always supplemented by a sociomatrix of every individual recording his choices, rejections, and indifferences (pp. 80-84). He argues that "the sociogram has not thus far been developed to the point where it is useful for general analytic purposes". The literature shows, on the contrary, that the sociogram has shown potentialities for analytic aims more than any other sociometric instrument to date, at least when used by me. I discovered by means of the sociogram the *"cleavage"* in groups, the *"social atom"*, the *"interpersonal network"*, the main sociometric types of *"leadership"*, *"group cohesiveness"*, the sociosexual evolution of groups, the sociodynamic effect, etc. Loomis has discovered by means of the sociogram the special groups of *"movers"* and *"stayers"* in resettlement communities (see SOCIOMETRY, Volume II, 1939, pp. 56-76). I do not know of any other social instrument which has done so much for the study of primary-group structure as the sociogram has. The sociogram has been developed into new forms since my introduction of it: 1) the target diagram by Northway, 2) Bronfenbrenner's adaptation (SOCIOMETRY, Volume VII, 1944), 3) Chapin's three-dimensional sociogram (*Social Forces,* 1950), 4) the multiple criteria sociogram, in which all criteria around which an individual's rela-

tionships revolve are considered, 5) study of longitudinal series of sociograms as well as 6) psychological geographies of entire communities. (e) He says (p. 53, op. cited) about the sociometric technique that "it does not record actual association; it does not describe actions: it does not provide a picture of the actually existing group relations and group tensions in a concrete situation. To disclose the latter, it would be necessary at least to compare the result of the sociometric test with observations of the actual behavior of the group members; then the discrepancies between the actual and the preferred clusters of association might give some clue to the extent and nature of the cleavages in the group structure." This statement disregards the chapters on "Organization and Conduct" (pp. 196-201) and "The Psychological Home" (pp. 201-208) in which the actual behavior of the group members is described and compared with the result of the sociometric test. Indeed, it is in total contradiction to the entire direction of the book in which the actual behavior of individuals within the life situations is continuously weighed against their responses to the sociometric tests. I stated emphatically in my first official introduction of "sociometry" in the journal: "The first decisive step in the development of sociometry was the disclosure of the *actual* (italics here) organization of a group" (SOCIOMETRY, Volume I, p. 211). The supplementation of the sociometric test, not only by interviews, but by spontaneity and role testing, is another illustration of the effort made to confront the behavior and the motivations of the individuals tested with the test results. To reinforce this point of view, I had devised a special test "it consists in letting the members of the group choose their neighbors at the dining table. *The choices and motivations given are then "compared" with the actual seating order the members had at the time"* (p. 429, *Who Shall Survive?;* see for a complete description of this test *Sociometric Review,* 1936, pp. 26-30). (f) He reports that "the pure sociometrists still restrict themselves to elementary choices and rejections." May I point out that my German book *Das Stegreiftheater* (1923) contained spontaneous-interaction diagrams which depict exclusively *actual* instead of *preferred* associations. I had described there this type of matrix with numerous illustrations of interaction diagrams showing concrete group situations; I have presented such interaction diagrams also in my first American book on group procedures in an effort to depict the interactions of children and adults (*Application of the Group Method to Classification,* National Committee on Prisons and Prison Labor, New York, 1933, p. 103). "The diagrams were our first attempts and seem to be the first in this direction—to present through a system of coordination the interrelationships of a number of persons during a course

of interaction. The time relations are indicated by the abscissa, the affects projected simultaneously by each member of the group are indicated on the ordinate. Thus the diagram presents, on one hand, a series of several individual pictures permitting a survey of the various states following in sequence; and on the other hand, the individual pictures as placed one above the other make it possible to distinguish what state of one person runs parallel with a state of another person, that is, what are the points of coordination within the group". (g) Shils reports further "Moreno's own researches during his 'sociometric' phase were not particularly oriented toward problems of primary-group structure" (p. 53, op. cited). Here the author apparently is ignorant of the situation at Hudson; if the cottage groups of 25 to 35 girls, living with a housemother in a most intimate face-to-face relation and the workshops with 10 to 15 girls working under a foreman are not primary groups, I do not know what primary groups are. Every sociogram of this community in *Who Shall Survive?* represented an intensive study of primary-group structure, indeed without parallel in the entire literature of sociology. (h) The writer, when trying to assess sociometric theory says: "Moreno's conceptual scheme (which designates attitudes and dispositions as "tele" and group situations as "atoms") . . . ". The writer calls "tele" an attitude and identifies group situations with atoms, which is obviously an inaccurate reporting of these sociometric concepts. (Reading, in addition to *Who Shall Survive?*, "Sociometric Statistics of Sociometric Configurations", SOCIOMETRY, Volume I, 1937, may have given him a better orientation.) (i) The writer reports that I have diverted in recent years my attention from analytic empirical research to psychodrama and sociodrama, implying that they are not analytical and empirical and that I have changed the direction of my interest. Actually, psychodramatic experiments are not less or more analytical and empirical than sociometric tests; they have been my earliest preoccupation since 1911 and were carried out parallel and simultaneously with my sociometric research (refer to *Who Shall Survive?* psychodrama and sociodrama tests); both ventures have consistently retained my fullest interest. (j) The writer gives the impression that the technique of recording verbatim the interactions occurring in interview and dramatic situations has been introduced by others and that I have neglected to use it; it has actually been proposed by me as early as 1931 (*Application of the Group Method to Classification*, pp. 16-18) and practiced ever since. (See also *Who Shall Survive?* in which actual protocols of psychodrama and spontaneity tests are published, 1934, pp. 170-96.) Dozens of protocols have been published; hundreds of unpublished tape recordings are in the

files of the Sociometric Institute. Many psychologists and psychotherapists, like Carl Rogers and others, have followed my plan of recording interviews in order to improve the objective scientific possibilities of analyzing primary-group relations. (k) He is not aware that I coined the term "group therapy", formulated its concept and developed its first methods. (*Who Shall Survive?*—"Group therapy treats not only the individual who is the focus of attention because of maladjustment but the whole group of individuals who are interrelated to him in the community", 1934, p. 301.)

Considering this long array of inaccurate reporting of facts in a paper whose virtue should be accuracy and honest accounting, *I have come to the conclusion that Edward A. Shils "never read" Who Shall Survive?* It is unfortunate because his survey has spread distorted and incomplete views and has been copied by many others automatically as if it would be an authoritative account. Apparently he reported from articles he had read "about" *Who Shall Survive?* and from what he has heard people say about the book. He took their reports for granted instead of reading the original source. Scientific "digests" can be of great value for the development of a new science but they can also do great harm to it. The least one could expect from a survey analyst is that he reads the literature he surveys; nobody denies him the right to his own personal bias as to what he considers valuable or not.

It gives me pleasure to pass from the pretentious but poorly informed survey of Shils to such scholarly, encouraging and productive criticisms as the ones from von Wiese, Gurvitch and Znaniecki.

Von Wiese writes about sociometry (*Kölner Zeitschrift für Soziologie*, 1948-49, Heft I): "The processes of approaches and withdrawal appear to be for Moreno of an exclusively emotional character. They take place in the psyche of men; the realm of psychology is not abandoned. All his studies and postulates imply that the social and the psychic are one and the same." It is interesting that Gurvitch accuses von Wiese of the same deficiency. "It could be asked whether the sociometric concept of social reality has gone much beyond the intermental interpretation by Gabriel Tarde, Georg Simmel and Leopold von Wiese . . . while neglecting the 'collective psychology' proper." (Gurvitch: "Microsociology and Sociometry", *Sociometry in France and the U. S.*, 1950, p. 11). Contrary to von Wiese's claim, I have pointed out repeatedly that emotions are only *one* factor determining the structure of interpersonal relations and that objective criteria, needs, values, aims, skills, competencies are indispensable parts of a sociometric procedure. Let me quote here from "Sociometry in Relation to Other Social Sciences", my official paper in the first issue of

SOCIOMETRY, Volume I, 1937, page 211: "The first decisive step in the development of sociometry was the disclosure of the actual organization of a group. The second decisive step was the inclusion of subjective measures in determining this organization. The third decisive step was a method which gives to subjective terms the highest possible degree of objectivity, through the function of the auxiliary ego. The fourth decisive step was the consideration of the criterion (a need, a value, an aim, etc.) around which a particular structure develops. The true organization of a group can be disclosed if the test is constructed in accord with the criterion around which it is built. For instance, if we want to determine the structure of a work group, the criterion is their relationship as workers in the factory, and not the reply to a question regarding with whom they would like to go out for luncheon." The precedent of the actual structure of the group to which subjectivity data are added is here clearly indicated. I am generally regarded as having differentiated with greater emphasis than anyone previously between the structure of the individual psyche and group structure on the basis of empirical evidence, overcoming the deficiencies of psychoanalysis. And here comes von Wiese and says in all earnestness that I have done nothing of the sort, that for me everything takes place in the individual psyche. Could it be that this misunderstanding comes from the fact that von Wiese, like Gurvitch, is primarily a "system"-theoretician looking habitually at the Grammar and Logic of presentation rather than upon the inventions, operations and experiments which a man is producing? He did not take into account the great role which the cultural and social conserves are given throughout my work from its earliest appearance on (1918). Could one imagine that cultural conserve like social institutions, books and robots are exclusively in the psyche of men, in the realm of subjectivity as von Wiese suggests? In his introduction to the German Edition of *Who Shall Survive?* (*Die Grundlagen der Soziometrie*), he goes even beyond this by contrasting me with Emil Durkheim. "Durkheim, who represents sociologism in its most extreme form, rejected psychology entirely as the foundation of sociology. But Moreno does just the opposite. One can consider him as the extreme representative of psychologism. . . . Just in between these two extremes is my own science of human relations." But Gurvitch scolded von Wiese that he, too, neglects the collective psychology proper. Who is right here? Who is playing collectivity up more? Are we perhaps quibbling over words? It occurs to me that perhaps each of us—von Wiese, Gurvitch and Moreno—with all regard we have for each other, have a distorted perception of each other's work and may profit from a

psychodramatic session, being forced to face each other's ideas on an operational level, robbed of our beloved semantics. Everyone is a prophet in his own book, but no one is a prophet in the book of the other.

In his admirable critique of sociometry "Microsociology and Sociometry", *Sociometry in France and in the U. S.*, Beacon House, 1950, Gurvitch pursues systematically the definitions which I have given to the "social atom" from 1934 to 1947, showing inconsistencies in my definitions. In 1941, he criticized me for using the term "projection" in the definition as this suggests "a latent subjectivity" to the concept. It looked as if the social atom would be a measly product of interpersonal relations; I should have penetrated behind them "into the basic sphere of the We" in order to define it as a collective concept. A few years later, in 1943, he finds that I have done this at last by "taking advantage of the concepts social roles and cultural atoms", but that I did not fail to slip again three years later, in 1946 (*Psychodrama;* Volume I), etc. Certain inconsistencies in the definition of terms are unavoidable in a growing young science, rigidity of definition is perhaps a greater sin.

Znaniecki's argument (*Sociometry*, Volume VI, 1943, pp. 225-233), after showing a high sense of appreciation for the sociometric method, is "that a social system, once organized, loses its original dynamic character and becomes a 'stereotyped end product' parallel to the 'cultural conserve stage in a work of art'." This is a fine point to bring forth but I have not meant to imply that the creative potential of a social institution, for instance, of a marriage, comes to a dead end just because it is old and lived out. I have repeatedly demonstrated that cultural and social conserves can be vitalized and rejuvenated in proportion as the factor of spontaneity enters into and brings it to a fresh start. I say in the same paper from which Znaniecki quotes: "It is not to be assumed, however, that processes of human relations cease to exist when a cultural conserve or a stereotyped relationship enters the picture. In either case, a new social situation is begun which requires special methods of investigation." It is amusing, Znaniecki says about the same thing in his critique—we apparently agree. "For the majority of couples, indeed, marriage still remains "the grave of love", as it was at the time of the troubadours—but not because the love relation becomes "stereotyped", simply because it ceases to exist: a relation of a very different logical class, with different standards and norms, is formed instead."

Longitudinal studies of marriages from their statu nascendi in the dating and going-steady through the engagement and matrimonial period and so

on to their organized end forms are required in order to determine (a) the rising and falling of creativity in the relationship of two partners and (b) the stability of their interpersonal relations; (c) the adequacy and appropriateness of the manner in which they perform towards each other, (d) their range of roles and productivity in them—the sexual and lover role, the provider role, the role of the emotional companion, the role of the financial partner, the role of father and mother when children enter the picture, the role of worshipper or host, of homemaker and intellectual companion—all these and other factors must be assessed in order to determine the "creativity quotient" of an ongoing marriage situation. Only careful investigation of a large sample of marriages from the point of view of their spontaneity, creativity and role functioning can prove or disprove my hypothesis that marriages, as do other social systems, give in statu nascendi the best basis for understanding their structure and that the more the investigator loses contact with the status nascendi of a social system, the more he loses contact with its crucial portent. I continued my critique with the words: "The social sciences have been too much preoccupied with studies of processes after they have become cold. The status nascendi has been neglected. Most of the studies of man-woman relationships occur when the anti-climax has been reached—when the flow of feeling between the man and woman has dried up and the love which brought them together is over."[3]

SOME FACTS ABOUT SOCIOMETRY

The journal SOCIOMETRY is now in its twentieth year of publication, counting in The *Sociometric Review,* its forerunner, which was published in February 1936. The *American Sociological Review* was founded in the same year as the organ of the American Sociological Society. It is an interesting coincidence that the two journals, so different in origin, should have started in the same year and destined to become both official journals of the American Sociological Society.

The *Sociometric Review* was headed by an Advisory Research Board

[3] "Psychodramatic Treatment of Marriage Problems", SOCIOMETRY, Vol. III, 1940; Leona Kerstetter, "Role Testing for Marriage Prediction", *Sociatry,* Vol. I; "Psychodrama of a Marital Couple", *Sociatry,* Vol. II, 1948, pp. 103-120.

appointed by the New York State Board of Social Welfare: Gardner Murphy, Chairman, Columbia University; Franz Boas, Columbia University; Barbara S. Burks, Teachers College, Columbia University; Hadley Cantril, Teachers College, Columbia University; John L. Childs, Teachers College, Columbia University; Lyford Edwards, Bard College, Columbia University; Helen Jennings, New York State Training School for Girls; William H. Kilpatrick, Teachers College, Columbia University; Helen Merrell Lynd, Sarah Lawrence College; Robert S. Lynd, Columbia University; Jacob L. Moreno, New York State Training School for Girls; Lois Barclay Murphy, Sarah Lawrence College; Theodore M. Newcomb, Bennington College; Ralph B. Spence, Teachers College, Columbia University; Fannie French Morse, Supt. New York State Training School for Girls.

When in July, 1937, SOCIOMETRY assumed its present form, J. L. Moreno was its publisher, Gardner Murphy, its editor, and Eugene L. Horowitz its Managing Editor. It had the following staff of contributing editors: Gordon W. Allport, Harvard University; Hadley Cantril, Princeton University; Helen Jennings, New York State Training School for Girls; William H. Kilpatrick, Teachers College, Columbia University; Nolan D. C. Lewis, Psychiatric Institute, Columbia University; Eduard C. Lindeman, New York School of Social Work; Robert S. Lynd, Columbia University; Theodore M. Newcomb, Bennington College; Gertrude Franchot Tone, Beacon, New York; William Alanson White, St. Elizabeths Hospital, Washington, D. C.

Murphy's Editorial Foreword of the first issue charted as the potential aim of SOCIOMETRY "the integration of the social sciences", but he warned that "it is not an achievement likely to be carried to completion in our generation, or by any single method." Its Table of Contents heralded already the major trends of the journal's future development: sociometric measurement, small group research, community studies, psychodrama, role playing and group psychotherapy. It contained sociograms and sociomatrices and began to publish tape and dictaphone recordings of interview protocols. The impetus given by SOCIOMETRY to publish verbatim recordings of protocols, for conveying greater objectivity of reporting interviews, dialogues, etc., has become a general practice—counselors, directive and non-directive, psychotherapists, group psychotherapists are following this pattern.

Practically every article of the first issue has become a classic in the field, Moreno's monograph on Psychodrama: "Interpersonal Therapy and Psychopathology of Interpersonal Relations", as well as his expose on the Philosophy of Sociometry: "Sociometry in Relation to Other Social Sciences". Jennings' "Structure of Leadership—Development and Sphere of

Influence", Criswell's "Racial Cleavage in Negro-White Groups", Lundberg's "Social Attraction-Patterns in a Rural Village", Newcomb's "Intra-Family Relationships in Attitude", Sherif's "An Experimental Approach to the Study of Attitudes", and others.

The barriers which the new journal had to overcome were in its very title. It contained then two practically unknown terms: "Sociometry" and "Interpersonal Relations". It seemed a daring enterprise to confront the reader with two riddles, but the currents of public opinion in academic circles were in their favor. They became rapidly accepted and respected, and so the courage of the Journal's editors was well rewarded. There is no one who doubts the originality of the Journal's main title; but few realize that also its under-title "Interpersonal Relations" was used for the first time on the cover of a journal.

NEW EVALUATION OF SOCIOMETRY

GARDNER MURPHY

When Dr. Moreno and his collaborators developed, over twenty years ago, the basic theory and method known as sociometry, it was an open question whether this was simply a technical device or the beginning of a new way of viewing human relationships. Time has shown that the latter is the case and that sociometric modes of thinking have profoundly influenced many aspects of social theory.

The reasons lie, I believe, first in the intimate association between sociometry and the theory of the basic needs and aversions which draw human beings together or push them apart. A sheer technical device for the demonstration of positive and negative affinities would hardly have cut deep into the tough structure of social science thinking. Anything, however, which expresses the hope of quantification with reference to those broad cravings for fellowship, and those broad cravings for specific affiliations of specific types, is bound to be important for the theory of small groups and indeed for the theory of society at large. It was, I think, because of its association with the theory of *tele* and with the concepts of *spontaneity testing* and *spontaneity training* that sociometry was most effectively launched.

It has been interesting to watch in the last two decades the way in which

sociometric theory has become woven into the theory of social attitudes, as exemplified, for example, in the survey by Gardner Lindzey and Edgar F. Borgatta; and interesting, on the other hand, to note ways in which the impacts of education and psychotherapy upon interpersonal relations can be gauged through broadened and refined sociometric devices.

As in the case of any healthy social science development, there must be distinctions between empirical factual material which can be shared by all members of a group trained in a special discipline, and, on the other hand, theoretical structures, regarding which differences of opinion will remain. Fortunately, the sociometric concepts in their ever-developing and ever more useful forms can be accepted both by those who accept and those who reject specific doctrines regarding the nature of tele and the nature of interpersonal needs and rejections. This is as it should be. A larger and larger share of the area mapped out for sociometric investigation will become organized and the gains consolidated, while theory will push forward always into new areas, armed with techniques which have been developed in the better explored regions.

It is a pleasure to join with Dr. Moreno and his associates in a recognition of the milestone which is marked by this anniversary issue.

RETROSPECT AND PROSPECT

THEODORE M. NEWCOMB

Any researcher who, after assuming that he alone is working on the world's most important problem, has had the experience of discovering that another has also had the wit and the fortitude to work on it, is likely to remember the moment of the discovery. For me such a moment occurred in September of 1934 when, at the annual meeting in New York of the American Psychological Association, I stumbled upon a freshly printed copy of *Who Shall Survive?* Here was reported a research project far more ambitious in almost every way—including the hard-cover, bright-color form of its publication—than the one with which I had been associated and which, till then, had resulted in no publication beyond a tiny brochure. I had no idea who this J. L. Moreno might be, but obviously I had much to learn from him.

And so, indeed, it proved. Through the kind offices of Gardner Murphy I soon met him and discovered not only that he was teeming with ideas but that he was an almost-neighbor of mine. A mind that was not only teeming, but teeming with (*inter alia*) "my own" kind of ideas was a find indeed; but to find that it held forth in Hudson, New York, just 72 miles from Bennington, Vermont, was added good fortune, and I made the most of it. In Hudson I found also Helen Jennings, with whom I exchanged many research ideas, to my own benefit.

By some sort of wile, which I have long since lost, I persuaded Dr. Moreno to add my name to others which made up a Research Advisory Committee, and this gave me an opportunity to make repeated visits to Hudson, and later to Beacon Hill. To the best of my knowledge, he still labors under the illusion that, in this capacity, I was advising *him*; secretly, of course, I was soaking up wisdom, learning research techniques, and being the recipient of all kinds of good advice, much of which I was able to exploit in my then on-going study of the Bennington College community. I also took advantage of him by persuading him to include, in Volume I, Number One of SOCIOMETRY, a research report to which I had devoted some years. I take a certain satisfaction, now, in having had a word in both the first and the last of the issues of this journal under Dr. Moreno's editorship.

I have always liked the subtitle—"A journal of interpersonal relations" —with which SOCIOMETRY began its publication. It happens that most of the research in which I have participated, off and on for nearly thirty years, has, like that in which Moreno and Jennings were engaged when I first met them, dealt with interpersonal relations among members of continuing groups. Such problems are at the heart of my currently most absorbing project, a report of which must await later publication—much as I should like to accept Dr. Moreno's invitation to present here "a fragment of this research." It is already clear, however, that it is useful to consider both a direct and a mediated kind of sociometry of interpersonal relations. By the latter I mean something like Tagiuri's "relational analysis," with the difference that I have in mind perceived attitudes of others not toward oneself but toward objects in the common environment to which one also has attitudes, oneself. Not only are one's own attitudes to others interdependent with their perceived attitudes to oneself, but both turn out to be interdependent with one's own and the perceived attitudes of others toward relevant common objects. The changing structure and developing solidarity of a group can be quite neatly charted in terms of such a person-person-object sociometry, and the "direct" appears to be predictable from the "mediated" sociometric

structure of an established group. If this variant on Dr. Moreno's original theme proves as promising as there now seems reason to believe, it will be an additional tribute to the richness of that theme.

As an Associate Editor of SOCIOMETRY under its forthcoming sponsorship by the American Sociological Society, I like to remember that I was also one of its Contributing Editors in 1937, when it seemed a venturesome enterprise indeed. May its new Editors be gifted with some of Dr. Moreno's pioneering spirit.

SCIENCE, ART, ETHICS AND SPONTANEITY

READ BAIN

When Dr. Moreno asked me to say something in his final issue of SOCIOMETRY, I was surprised because I have done little for sociometry except to approve its purpose and lament its name. I thought the invitation was merely an example of the well known Moreno "friendly spontaneity" but he assured me I had done more for "sociometry" than I realized: my early interest greatly encouraged him and his co-workers; as editor of the *Review*, I published several early sociometric articles; always stressed the importance of small-group research; always advocated quantification and measurement in social research; had been a constructive critic of sociometric (I prefer "ranked-choice") research and an interested advocate of psychodrama, sociodrama, and sociatry (group psychotherapy); and finally, had been a "staff writer" on SOCIOMETRY—"Man Is the Measure . . . ."

This is all true so I agreed to make a brief statement of why I think the "sociometric movement" is significant.

I first heard of Moreno in 1934 or 1935. When Lundberg and I went to Washington in 1924, I was greatly impressed by the wit, wisdom, and brilliant lecturing of Howard Woolston and kept in touch with him after leaving Washington in 1927. When he told me *Who Shall Survive?* was one of the most stimulating books he had read in years, I read it immediately and was similarly impressed. Moreno seemed to be *doing* what our "gang" at Washington had been *saying* could and should be done.

Thereafter, Dr. Moreno was one of the bright attractions for me at the Annual Meetings. He fascinated me, whether I was hearing—and seeing

—him perform or talking or writing to him. His mind secretes ideas as the liver secretes bile; it leaps from point to point like a fire burning and leaves a shining residue, not the smoke and ashes which often are the only products of "leaping" minds.

The only other mind I know fairly well that gives me this same sense of "creative burning" is the mind of Stuart Dodd. These men have very different types of mind but they have one thing in common—both are artists. More accurately, perhaps, they are frustrated or potential artists who have been shaped by circumstance into a mathematical scientist and philosopher and a medical-psychiatric scientist and philosopher.

Moreno is always the actor. He also has the gift, or has acquired the art, of making others act. Acting is creating. Strictly, every act is creative, whether it be the acting of a man or a molecule, a plant or a planet. Every act involves the transformation of energy which, to some degree, *changes the universe*. There are no identities in nature; there are only relatively similar and relatively stable energy-systems. When these are disturbed, newness comes into now-ness and uniqueness is made manifest. The conserves (cultural patterns) of custom and tradition are shaken and reshaped and the fresh winds of creative change blow through the world.

The artist emphasizes dynamic uniqueness; the scientist, relatively stable and repetitive uniformities; the artist-scientist and the scientist-artist seek the harmonious integration of nature's uniqueness and uniformity. My subsequent emphasis on the spontaneity and uniqueness of the creative act does not deny the importance of the uniformity-principle, and particularly in social phenomena. Without relatively stable uniformities, there can be no science. Dewey and many others have shown the survival value of habit, or repetitive cultural patterns, in social life and the same is true of all physical and biological structures. Orderliness and relative stability in all types of natural phenomena are necessary for biological and social survival, but so are variation, change, and restructuring of old stable structures. This may seem paradoxical but it also seems to be true.

In the past, science has been mainly concerned with the stable and static aspects of nature. Modern science has become more conscious of dynamics, of the energy exchanges and transformations which bring new systems into being. Biology led with evolution, variation, mutation, selection, and "environmental" modifications such as diet, training, and conditioned responses; physical sciences, with synthetic chemistry, radioactivity, astronomic dynamics, epeirogenic, vulcanic, and climatic changes; and social science has followed them by discovering that "you *can* change human

nature," by shifting from eugenics to euthenics, from fatalistic resignation to the alleged will of God to a concern for the dynamics of social change, social control, and conscious direction of social phenomena.[1]

This paper stresses the often neglected significance of uniqueness, of the creative act, but it does not minimize the significance of the relatively stable uniformities. Uniqueness and uniformity are both *facts*. They are necessary and sufficient factors to account for both the structure and functioning of natural phenomena. They are interdependent and interactive. Both must be dealt with in all adequate systematic thinking. I had received this idea from many sources before reading Moreno, of course, notably from C. H. Cooley, A. H. Lloyd, Roy Sellars, G. H. Mead, and on back to Democritus and Heraclitus, but Moreno dramatized the idea of *"the creative act,"* the spontaneous, creative nature of the *"moment"*, the here and now.

Most creative scientists are also artists or artisans. Creative art and science seem to coalesce, as do ethics and art, and art and science. These fields are not so clearly separated as some writers would have us believe. While man's various roles can be differentiated *analytically*, man always acts as a unit and all his roles are dynamically interactive. When this wholeness is broken by too much rigidity and separation of roles-in-action, varying degrees of autopathic behavior result. There is profound truth in the ancient concept of the True, the Good, and the Beautiful.

One thinks of the creative scientist who is also a painter (Chapin, Bales); a poet (Dodd, Santayana); an accordian player and patron of all the arts (Lundberg); a worker with tools (Cooley and W. I. Thomas, the latter being also an inventor, as was Herbert Spencer); a journalist whose son was a concert violinist (E. A. Ross); a violinist (Einstein); a novelist (LaPiere); a who-dun-it writer (E. T. Bell); an azalea fancier (Sorokin). Many other examples could be cited and I think the proportions would exceed chance. You do not have to scratch a creative scientist very deeply, or a creative business man (Morgan, Mellon and painting), or a creative statesman (Truman, piano; Jefferson, violin) to find a better-than-average artist or artisan.

It is this lust for artistic outlet, or creative expression, rather than frustrated sexual impulse as Freud would have it, that produces the creative man. Actually, most creative men in all fields have been passionate lovers whose "sexual outlet" was not greatly frustrated. Creative men are neces-

[1] For a most penetrating recent study along this line, see Richard T. LaPiere, *A Theory of Social Control*, New York: McGraw-Hill, 1954. Pp. xii + 568.

sarily efficient energy releasers. Sexuality and love both use plenty of energy —perhaps more than hard manual labor. Novelty and originality appear only when "the cake of custom" is cracked. The outcome is creativity if it "works"; chaos, if it fails.

The psychology of the "moment", the "here and now", is the core of Moreno's thinking. His problem is how to modify constructively the constrictive conserves of the past. His answer is psychodrama, sociodrama, group therapy, and the release and renewal that come from the spontaneous power of the *creative act*. In this way only, says Moreno, can man attain freedom, become a whole man and a master, a creative agent, a healthy *self*.

Moreno has great spontaneity and all men are spontaneous in varying degrees. Living is acting in the *moment;* acting always has consequences; effective acting, the *sine qua non* of living, brings new entities and relationships into the world. This is the necessary prerequisite for adaptive adjustment and survival. Acting in any situation is creating, but there are many degrees of deviation from the customary and conventional. Moreno, like all original men, deviates from the central tendency more than the average man.

Moreno's psychotherapy is largely the application of the above principles plus a clear recognition of the group-determined nature of so-called individual behavior. Autopathic illness is mainly characterized by rigidity, formalism, and compulsiveness in contrast to the freedom and adaptiveness of normal behavior. In his youth, Moreno told stories to children in the Gardens of Vienna, with a crowd of adults gathered around. First, he sat on a root at the foot of a tree, then on a branch above the crowd, with the children sitting and standing in concentric circles. This was the prototype of the Three Level Psychodramatic Stage.[2] The children, and almost certainly the adults, may have thought Moreno was slightly mad, but they all were interested and excited, and they all participated.

Moreno thus discovered almost by accident the basic Fallacy of Freud—his failure to see the significance of the Group—and culture. Moreno taught the children, and later his patients, how to escape the compulsive complexes of the "conserves" (culture patterns) and breathe the free air of normal adaptive living, which means living *in, by, with,* and *for* the *group*. There are no individuals in the old atomistic, instinctual, Freudian sense; there are only group-members: "Ye are members one of another". A *person* is a social structure, group-born, group-nurtured, group-functioning. All men are

[2] "Preludes", page xviii, *Who Shall Survive?*, Beacon, New York: Beacon House, Inc., 1953 edition.

products of all the men who have ever lived. The conserves (culture patterns) tend to become static, "ossified" (Ross), formalized (Cooley); the creative act in groups, in all social structures, makes human society a living, growing, and *surviving* dynamic equilibrium. Many have called Moreno's title a misnomer but I think the above interpretation shows the appropriateness of *Who Shall Survive?*. Creative group-members shall survive.

It was Moreno's vivid statement of the group-centered here-ness and now-ness of human living that most impressed me twenty years ago, and still does. It was more dramatic than Cooley's doctrine of tentative growth and Mead's significant symbols, particularized and generalized others, and roles. All of Moreno's other ideas seem to me to stem from this root-concept of the spontaneous creative act in the group-centered *now*. *Now* is eternity; eternity is now. Man is free to dare, to *do;* to think what most people may regard as wild thoughts; to try new paths that may lead to new Elysiums. Man is basically an actor, a player of roles, an artist, a poet, a seer of visions, a searcher for the Holy Grail of adaptive group living. Thus only shall he survive.

I have always been interested in the spontaneous, impulsive, erratic behavior of human beings. The "inspirations", "insights", and "revelations" of artists and prophets have their counterparts in the hunch-hypotheses, "feelings", and speculative flashes of creative scientists. They are like the blind groping of the tendrils of a growing plant (Cooley), or the sympodial breaks in culture (Ward), or the "emergents" (Lloyd Morgan), or the gene mutants (T. H. Morgan). Most of them come to nothing, or are positively deleterious, but some become living, cumulative structures like the new green tips on the fronds of firs.

In Moreno's language, "warming up" is the preparatory phase of the creative act. Possibly my interest in it stems from my youthful passion for baseball and other sports, from observing musicians "tuning up" (my father was a fiddler), from watching the "faithful" at revival meetings kindling the "fire of the Lord" (a favorite pastime in my youth), from seeing people "warm up" to each other in love and friendship, and from being painfully conscious of what goes on "inside" of me when I have to "make a speech".

> . . . Ever since I can remember, I have used the "warming up process" whenever I wanted to do an important job well. . . . When I used to write "important" love letters and intimate friendship letters more than I do now, or letters to persons on whom I wanted to make a good impression, I often warmed up by writing a few unimportant letters first. Even now, after I have collected my data, thought about it,

> etc., when it comes to the actual writing of a scholarly article, I frequently warm up by writing something of less importance first. After the first "spontaneous" draft is written, I then revise, rewrite, and modify my "spontaneous" product for precision, clarity, and concision. I imagine some such procedure is common to all people who try to do any creative work.[3]

We know very little about "warming up" except at the commonsense level. There is little or no comparative or systematic knowledge about it, to say nothing of empirical research. I have tried, but so far failed, to interest graduate students in research along this line. It should be interesting and useful.

My interest in spontaneity and warming up made me eagerly accept Moreno's invitation to write "Man Is the Measure . . . " for SOCIOMETRY. The "column" was intended to be a place where I and others could express freely and spontaneously any hunch, wild idea, question, criticism, or suggestion about *anything*—could play the role of the Shakespearean Fool in the chaste—and stuffy—halls of Academia.

The sad fate of "Man Is the Measure . . . " is an amusing example of how "cracking the conserves" may also crack the cracker. It ran for nine issues (Nov. 1942 to Nov. 1944), striving for a light, satiric, reformitarian, and slightly iconoclastic tone which was expressed in the final sentence of the first issue:

> A little wildness now and then
> May profit professorial men.

Perhaps I was too "spontaneous", or not spontaneous enough; or my "humor" was not humorous enough; or my "lightness" was too heavy. In any event, I eventually had to be "fired". Lundberg bluntly says my discussion of "caninophilia" (titled *Life Is Tuff—for Bitches*) was the straw that broke the bainal back but Moreno put it more gently by saying that some members of the Editorial Board thought the "Column" was too facetious, undignified, and unscientific for a serious scientific journal.

However, many people told me they enjoyed it and were sorry it was discontinued. I enjoyed doing it and eventually published several papers based on the "spontaneous" ideas first expressed in "Man Is the Measure . . .". I had hoped others might be stimulated by ideas which they and others would contribute—but not a single "spontaneous" contribution was ever received.

The ideas of Moreno have "caught on" primarily because they are

[3] Letter to Moreno December 8, 1941.

useful and also stimulate "pure" research into the mechanism of social interaction; because they emphasize intensive study of small groups *in situ;* and because they stress the close interaction of science, art, and ethics.[4] The influence of Moreno on what is often called "small group study" and "group dynamics" has been important and will doubtless continue to affect this promising and rapidly developing field of research.[5] It is unnecessary to say more on this point than to express the opinion that sociology and social psychology owe Dr. Moreno a great debt.

It is likely "sociometry" eventually will denote *all* forms of social measurement rather than being limited to the ranked-choices which are the basis of the Moreno sociogram. "The sociometric movement" will mean *all* types and techniques of measuring social data. If SOCIOMETRY, as a Society publication, continues to specialize on small group research, including dyadic and multiadic groupings, and even the intra-personal interaction of roles (the *person* being defined as a functioning structure of social roles), it is probable that other graphic modes of representing interactions than the Moreno sociogram will be invented—as well as new methods of mathematical analysis. I am sure Dr. Moreno expects such developments and will welcome them.

It is also probable that Moreno's (to me) somewhat mystical conception of the "Godhead"[6] as the source of the "creative act" will be reduced to a figure of speech—which may be the only "reality" he ever intended it to imply. The "creative act" may find its philosophical explanation in the apparent *fact* that *all* energy systems are only relatively stable, that there are no *exact* repetitions of time-space events, that all events are actually *unique* (non-repetitive), and are "taken" as identical and repetitive only when it is convenient and useful to do so.

While Moreno's psychosociodrama has shown the basic error of Freud in ignoring the group and culture and has produced remarkable therapeutic results at less cost of time, money, and emotional turmoil than can be obtained by classical psychoanalysis, I am sure Moreno would be the first to admit that dramatic developments in this field may be expected when a sound, science-based etiology of mental illness has been created. It seems likely many, if not all, so-called functional mental illnesses, and possibly

[4] See my remarks in the *Opening Announcement of the Sociometric Institute,* April 1942, pp. xxxvi-xl, Beacon House Inc., Beacon, New York.

[5] See my "Action Research and Group Dynamics", *Social Forces,* Oct. 1951, pp. 1-10 and Moreno's "Preludes", *passim.,* in *Who Shall Survive?,* 1953 edition.

[6] See "The Words of the Father", J. L. Moreno (Editor), Beacon House, 1941.

many that appear to have an organic (genetic or psychosomatic) basis, are actually the result of post-natal definition of personality structures—a sort of parataxis of roles. The success of psychosociodrama suggests this may be the case. There probably is some genetic (or prenatal developmental) basis for some types of mental illness, but it is also likely that the particular form the diathesis takes is affected, or even "caused", by adverse social conditioning. If so, the indicated therapy is social re-conditioning, aided, of course, by all the drugs, surgery, physical therapy, and other devices that may be found helpful. In any case, psychiatry, as well as sociology and social psychology, is deeply indebted to Dr. Moreno.

For nearly twenty years, SOCIOMETRY has played a pioneering part in developing new scientific methods and findings, many of which already have found practical applications—with many more in the offing. I hope the next twenty years of SOCIOMETRY, under its "new management", will be equally productive.

SOMETHING OLD AND SOMETHING NEW

LEONARD S. COTTRELL, JR.

For many reasons, but especially because I stand in the honored if not altogether comfortable position of successor to Dr. Moreno as editor of SOCIOMETRY, it is a pleasure indeed to join with other contributors to this anniversary volume in expressing my profound appreciation of the work of the founder of this journal. In another place[1] I have attempted to place Dr. Moreno's contributions in the development of contemporary social psychology. It is gratifying to find this earlier evaluation so amply documented by such appraisals as those found in the historical section of the present volume. There is little that I can add other than warmly to second these statements.

What concerns me most now is that in the new phase of its existence SOCIOMETRY preserve and cherish its heritage of a creative pioneering spirit which has so consistently characterized the publication from its very beginnings. Particular concepts, theories and methodologies come and go in the unending empirical testing processes which constitute a major part of the

[1] Cottrell, Leonard S., Jr. and Ruth Gallagher. *Developments in Social Psychology 1930-1940*. New York: Beacon House, Inc., 1941.

responsibility of scientists. But without the venturesomeness and creative imagination so well exemplified in the work of Moreno a field regresses to a meaningless formalism. It is the intention and aspiration of the new editorial board to apply rigorous and demanding standards to what we publish but at the same time seek to avoid a sterile theoretical and methodological orthodoxy which would stultify the communication of creative ideas at the growing edge of the science. We bespeak the continued support and participation of those who have in the past been interested in SOCIOMETRY and all others who wish to contribute to the advancement of research in social psychology.

SOCIOMETRY: DECADES OF GROWTH

JIRI NEHNEVAJSA

A. INTRODUCTION

In the thirty some years of its existence, sociometry has acquired a rather impressive history. It is a story of men, their ideas, and their activities—a story which might well serve as the best operational definition of the field up to date.

The time has come when it becomes important to look back at the decades of growth of sociometry. Not because the growth of the field, having reached some climax, is about to be arrested but precisely due to the opposite consideration: sociometry has been expanding at an accelerated pace so that, unless we pause to recollect the paths along which the field has travelled thus far, we may lose track of some of them amidst the floods of new achievements. At the same time, sociometry—focused around its Journal for some twenty years—is about to enter an entirely new stage of development—that of international efforts (centering around the forthcoming *International: Sociometry, Group Psychotherapy, Sociodrama*—a journal to be led by Jacob L. Moreno).

Sociometry has been not only identified with the rigorous application of research techniques to specific problems in group and individual behavior—thus pushing back the frontier of methodology as well as content; it has grown also along the lines of social healing—diagnosis and therapy.

Simultaneously, sociometry has advanced as a theory of human behavior; on one hand, as a system of propositions rather solidly grounded in research findings, and on the other hand, through its theoretico-speculative growth, capturing the imaginative mind with its poetry of human living.

Criticized by some for its rigor, it has been mocked by others for its expressive desire to aid ailing humanity, while still others have found the poetry of speculative visions incompatible with the scientific rigor. Thus—not unlike all fields and their protagonists—sociometry has failed to please everyone to the same extent.

This combination of science, therapy and philosophy—all intertwined in much of sociometric work—may well be construed as a weakness in science which claims ethical non-involvement. But it has also been sociometry's strength: for it is this combination which permits growth on all "fronts" along all lines which seem promising whether, at the time, they are fashionable or not.

It is rather easy to see that this amalgamation of the three major endeavors—the scientific, the philosophic, and the therapeutic—is explainable in terms of the interests, and capacities, of the man who stands at the roots of sociometry. Jacob L. Moreno, a scientist, a poet, a philosopher, a healer has himself initiated, and pursued, the development of the field along all these lines. Others who have followed (sometimes by verbal following) have more-or-less become specialists: some have emphasized methods, some content—both efforts of utmost significance; some have emphasized therapy, others research; some inclined to quench their thirst at the springwells of poetry or else, looking for new springs, others painstakingly awaiting results of research before they dare to utter any generalization. Envisageing sociometry as a blend of research, therapy and theory, emphasizing the balance between the "socius" and the "metric" (etymologically implicit in the concept of sociometry), Moreno has been, perhaps, the only one never to lose sight of the forest for the trees, or the trees for the forest. Yet, in terms of our cultural patterns, Moreno has seemed "guilty" of several rather impressive "crimes". A physician-psychiatrist, he has invaded the domain of the sociologist, the social psychologist and the educator—grounds enough for some union-card minded scholars to reject the man as well as his work (sometimes even without knowing either). A theorist and system-builder, he has opened himself to the (often worthwhile) attacks which are launched against all system-builders and their systems. After attracting, through the development of the sociometric method, the high respect of an empirically minded community of scholars, Moreno has had the daring to come forth,

like Comte and Pareto, with a general theoretical construct without always awaiting the outcome of numerous useful (and numerous useless) researches. In a culture which does not seem to favor or nourish the rise of schools of thought, Moreno has openly been encouraging the formation of a sociometric school of thought. And finally—last but not least—the founder of sociometry remained aloof (until very recently*) of institutionalized academic associations (we cannot but think, for example, of the relative coolness of academicians towards a non-affiliated Spinoza). Yet, he has wanted to be heard by academicians. In simple terms, Moreno has not played, or conformed to, the roles expected of him in our particular culture. Hence, some misunderstanding, resentment and even hostility.

It needs to be emphasized that Moreno's clearcut individualism has not impeded the growth of sociometry but rather fostered it. When one forgets the personal arguments occasionally resulting, a solid body of scholarly discussions remains—a tremendous achievement at a time when it appears fashionable to be "nice to one another" no matter at what cost, and when avoidance of major criticism of one's colleagues in preference to a little bit too much of backslapping is the order of the day.

With these few remarks in mind, we may now look at sociometry, its roots and growth, its present state, its aspirations, and its probable future course. In so doing, we will unavoidably have to be somewhat selective; thus omissions or lack of emphasis given to important contributions to the field are a result of either the ignorance or bias (or both) of this author.

B. Origins of Sociometry

Moreno, indeed, did not "invent" the problems which sociometry was later to deal with. We agree with Florian Znaniecki ("Sociometry and Sociology", Volume 6, Sociometry) when he argues that the issues raised by the new field were old sociological problems but that sociometry merits the credit for enabling the behavioral scientists to study "phenomena which for thousands of years have attracted the social scientists and were rather evaluated than investigated".

Thus we find interest in groups, and in particular smaller groups, in the works of LeBon and Durkheim, Toennies and Simmel—and, of course, at a later date in the classical treatises of Leopold von Wiese and Charles Horton Cooley. But it was certainly Moreno who reduced the

* Moreno is, since 1952, a member of the faculty of the Graduate Department of Sociology, New York University.

problems in question to techniques of measurement and who, subsequently, rephrased their theoretic presentations.

In an article of 1949 ("Three Dimensions of Society", incorporated in Moreno's volume *Sociometry, Experimental Method and Science of Society*), the author says:

> "Sociometry is an axis with two poles. The arm toward one pole is directed toward the discovery of the deeper levels of society's structure. The other is directed toward promoting change of society based upon the dynamic facts found in its structure."

Here then is a clear statement of the research and therapeutic aspirations of sociometry—the difference, sometimes seen with sharp boundaries, between research sociometry and the sociometric movement. As a research field, sociometry has wanted to uncover the underlying social structures, the depth dimension of the society. As a movement, sociometry has aspired at modifying this structure toward betterment, that is, toward alleviation of the conflict which Moreno has seen imbedded in the discrepancy between the institutional (formal) social system and the patterns resulting from the operation of the tele-factor (the flow of affection and disaffection between persons and groups).

The basic roots of role-playing, and with it of group psychotherapy, may be found in the 1919 article "Die Gottheit als Komoediant" (Der Neue Daimon, Vienna). Emphasis on research in situ, in the actual setting of the subjects, originates in the work at Mittendorf, Austria (1916—to be reported for the first time in the 1934 edition of *Who Shall Survive?*) where families select their neighbors in a Government settlement. Suggestions for the use of the laboratory setting for the study, and diagnosis, of individual and group problems comes in 1923 (Stegreiftheater, published in Berlin-Potsdam, 1923).

In this fashion, three important aspects of contemporary activities in social psychology and sociology are more than anticipated: the use of a laboratory, research in situ of small groups, and group psychotherapy.

Modern experimental research in the behavioral sciences has but elaborated upon the basic ideas: that life-like situations, in miniature form, can be reproduced in a setting which is controlled, and controllable, by the researcher.

Research in situ may sacrifice the controls of which the scientist may be capable under laboratory conditions: but it can study the phenomena in question in all their actual intensity, and it may gain, due to potential motivation of subjects, in validity.

Thanks to the versatility of his interests, Moreno arrived at the "small group" focus from three sides at once: the therapy of groups, the experimentation with groups in the laboratory and the role playing techniques in psychodrama. Had he limited himself only to the experiment with laboratory groups, he may have never given "small group" research the big push in the late 20's and early 30's. Had he limited himself to group psychotherapy and psychodrama, in the clinical sense, on a trial-and-error basis, group therapy and psychodrama may not have been on the way towards scientific foundations; but because of his simultaneous interests in all three areas and playing one to fertilize the other, pure research, group psychotherapy and psychodrama have helped each in a different way for "small group" research to come of age.

Group psychotherapy, in its modern sense, cannot be separated from small group research; it may be said to begin here. Former writers had discussed the potential importance of groups in treatment of mental ailments but their notions appear rather vague. In its present sense, group therapy is soundly based on findings about the dynamics of groups, and it is aimed at tackling a patient's problem in its realistic context of *social relations*.

The basic *sociometric techniques* are generated in this era between 1918-23. Role-playing in "Die Gottheit als Komoediant"** (1919), and the sociometric test in "Der Koenigsroman"** (1923) in which children choose new parents (pp. 117-9). Actual psychodrama and sociodrama are reported in the Stegreiftheater (1923). The sociometric test was proposed for Mittendorf (1916); in the theatre of spontaneity (Stegreiftheater)** the actors choose their partners for the production. In this volume, we can also locate the first *interaction diagrams* (pp. 88-95)—to be adopted and further studied by Bales (Interaction Process Analysis, 1949). The first *positional diagrams* (p. 88)—to be adopted later by Kurt Levin (1936)—make their appearance. In these, the location in space and movements with respect to one another, of the psychodrama actors are graphically portrayed.

By 1932, these new concepts, as well as the new research tools, come to be presented to the American public. The National Committee on Prisons and Prison Labor published Moreno's "Application of the Group Method to Classification"; group therapy (p. 60), interaction diagrams and sociograms (p. 102) are here introduced. Sociograms were used during the 57th Annual Session of the American Association on Mental Deficiency (May 29-

** The author has had a chance to read these publications in the German original. They are available in the Library of Congress, Washington, D.C.

June 3, 1933) to demonstrate the psychological organization of a community, its depth structure. All this, of course, before the publication of the sociometric classic *Who Shall Survive?* in 1934. It is at this time that research, and therapy, go on in Hudson—with St. Elizabeths Hospital in Washington, D.C. following suit rather soon. By 1936, the first theatre of psychodrama is built in Beacon, New York: a theatre, a school and a mental hospital (in Moreno's own words) have their origin:

> "(The Theatre) was to explore upon its stage various systems of human relations, to arrive at the most productive cultural order. The school was to carry the principles discovered into teaching and learning, the training of sociometrists, group psychotherapists and psychodramatists who could start similar centers elsewhere. The mental hospital which was built around the theatre was to give the most acutely ill representatives of our culture the benefit of antidotes."
>
> (*Who Shall Survive?* 1953, lxvii)

With the appearance of the *Sociometric Review* (1936) to be followed by SOCIOMETRY (1937) under the editorship of Gardner Murphy, sociometry as a field of study, and a technique, was finally "launched" never to be slowed down in its spectacular growth.

Up to, and through, this time all sociometry was what Moreno was later to label "revolutionary" or "hot" sociometry ("Old and New Trends in Sociometry", SOCIOMETRY, Volume 17, May 1954): research was a by-product of the endeavor to better human relationships. Research, diagnosis, therapy and theory remain largely undifferentiated, although specific techniques are applied for the study of relationships (sociometric tests, interaction test), others for diagnosis and therapy (psychodrama, sociodrama) with theory at the foundations of all work.

C. INTERPERSONAL RELATIONS

Moreno's most dramatic definition of interpersonal relations is the one which he put into circulation in spring, 1914:

> "Ein Gang zu zwei: Auge vor Auge, Mund vor Mund. Und bift du bei mir, so will ich dir die Augen aus den Höhlen reissen und an Stelle der meinen setzen, und du wirst die meinen ausbrechen und an Stelle der deinen setzen, dann will ich dich mit den deinen und du wirst mich mit meinen Augen anschauen." Translated: "A meeting of two: eye to eye, face to face. And when you are near I will tear your eyes out and place them instead of mine, and you will tear my eyes out and will place them instead of yours, then I will look at you with your eyes and you will look at me with mine."
>
> (J. L. Moreno, *Einladung zu einer Begegnung*, p. 3, Vienna)

In 1918 (*Daimon,* Vol. I, p. 6) he began to use "zwischenmenschliche" Beziehungen, the German phrase for interpersonal relations and from then on systematically in several books, pioneering the modern theory of interpersonal relations which found its concentrated expression in "Interpersonal Therapy and the Psychopathology of Interpersonal Relations", SOCIOMETRY, Vol. I, p. 9-75. The modern versions (Sullivan, Horney and Fromm) of the theory of interpersonal relations are obviously influenced by Moreno's earlier formulations.

He writes in 1923:

> "Mit Lage ist nicht nur ein innerer Vorgang, sondern auch eine Beziehung nach aussen gemeint—zur lage einer anderen Person. Aus der Begegnung von zwei verschiedenen Lagen kann der Konflikt hervortreten (Begegnungslage)." Translated: "The personal situation is not only an internal event, it has also a relation outside of himself, to the situation of another person. Out of the interpersonal relation of two different individuals the conflict may arise (interpersonal situation)."
>
> (*Das Stegreiftheater,* p. 29, Potsdam, Germany)

He writes in 1934:

> " 'A' and 'B' are actually two poles of one movement reflecting and changing each other."
>
> (*Who Shall Survive?,* p. 170, 1st Edition)

Moreno's preeminence in the field of interpersonal relations is summarized by the British psychologist Notcutt:

> "The main business of analysis is still a group of two—the patient on the couch and the analyst in the chair. Although Freud's work dealt with the stormiest of human passions, his own attitude was that of a detached, pessimistic observer. The aim of his therapy was the destruction of illusions, the building of a realistic self-image. He had no great hope of making men happier or of seeing a future brotherhood of man, but he thought that he could make men wiser than they had been. A man of this temper is not the one to undertake inspirational work with groups. The fascination of Freud's discoveries was so great, and attracted the best minds in medical psychology to such an extent, that it seems to have been a long time before Moreno's ideas got a hearing in the learned world. Many people may have underrated the intellectual quality of his ideas because of his flamboyant expansive manner. Moreno really believes in brotherly love, and the possibilities of human community. For forty years he has taught that the cure of neurosis lies in the recovery of spontaneity, release from the tyranny of bureaucracy and of the machine, and a restoration of more direct human relations. Many of the ideas later stressed by Fromm and Sulli-

van can be found earlier in Moreno." (Bernard Notcutt, *The Psychology of Personality,* Philosophical Library, New York, 1953, p. 195.)

D. Sociometric Specializations

Ideally, one might agree with Moreno that a balance should be struck between theory, research and diagnosis. Yet, with the rapid increases in the body of sociometric data, with the unfolding of a theoretical system, with the advancements along methodological lines, specialization within the field was bound to set in. This in part reflects differential interests of men who have become involved in sociometry—as users of its techniques, or as modifiers and innovators, or as teachers. But in part, the absence of an integrated picture in the literature may have been felt rather disturbingly by those interested in all aspects of sociometric effort. At first, sociometric literature consists of the writings of Moreno—in German and in English, and of the articles in the new journal; yet, before anyone could have consumated all that was done up to that point, the number of contributions to the field increased greatly. Relevant bibliographies include today hundreds of titles: Moreno's listing (*Who Shall Survive?,* 1953) incorporates about 1,500 articles and books; the bibliography prepared by Strodtbeck and Hare (Sociometry, Vol. 17, May 1954) under the sponsorship of the Ford Foundation consists of 1,407 publications; Nehnevajsa's listing (*Koelner Zeitschrift fuer Soziologie,* Vol. 7, March 1955) includes some 500 publications pertaining to sociometric research only. Still, no coherent presentation of the contents of all this literature exists. Moreno's 1953 edition of *Who Shall Survive?* fills the gap in part. In his famed volume on *Social Research* (2nd edition 1942) George A. Lundberg, one of the major contributors to sociometry, presents a brief but rounded picture of the field; in Jahoda, Deutsch and Cook (*Research Methods in Social Relations,* Volume 2, Chapter 17, 1951), Loomis and Proctor come forth with a discussion of sociometric techniques, with Mary Northway (*Primer of Sociometry,* 1949) giving a cursory textbook-like overview of sociometry.

Several articles precede the works of Northway, Loomis and Proctor. Franz gives an early account ("A Survey of Sociometric Techniques", Sociometry, Volume 2, December 1939), Stuart Chapin reviews trends within the field ("Trends in Sociometrics and Critique", Sociometry, Volume 3, August 1940), Esther Frankel investigates available materials on friendship configurations ("A Survey of Sociometric and Presociometric Literature on Friendship and Social Acceptance Among Children", Sociometry, Volume 7, November 1944). A decade of social psychology's growth is re-

viewed by Leonard S. Cottrell and Ruth Gallagher in the classic "Developments in American Social Psychology", SOCIOMETRY, Vol. 4, No. 2 and 3, 1941; a decade of sociometry's growth is overviewed by Charles Loomis ("Sociometry, 1937-1947", SOCIOMETRY, Vol. 11, 1948) whereas Stuart Chapin, once again, presents some of the salient methodological aspects in his volume on "Experimental Designs in Sociological Research" (Harper and Brothers, 1947, pp. 191-197).

During the past two years, 1954 and 1955, several over-all reviews have appeared. In Germany (Westdeutscher Verlag, Koeln und Opladen) appears Moreno's "Die Grundlagen der Soziometrie" (1954) with an introduction by Leopold von Wiese, a crucial protagonist of sociometry in the country. In France, "Fondements de Sociometrie", Presses Universitaire, launched by Georges Gurvitch, selections from *Who Shall Survive?* are translated and published. In America, Lindzey and Borgatta write an excellent chapter on sociometry in the *Handbook of Social Psychology* (1954, Volume 2). During 1955, two articles surveying research sociometry and sociometric research techniques appear in Germany (Nehnevajsa, "Soziometrische Analyse von Gruppen", *Koelner Zeitschrift fuer Soziologie,* Volume 7, March 1955; and Part II, Volume 7, July 1955). Two outstanding contributions to the literature come from the pen of Mouton, Blake and Fruchter ("The Reliability of Sociometric Measures", SOCIOMETRY, Vol. 18, February 1955), and by the same authors in the August 1955 issue of SOCIOMETRY "The Validity of Sociometric Responses".

Moreno has announced the publication of an atlas of sociograms and psychosocial networks; in Germany, under the editorship of Rene Koenig, Nehnevajsa's survey chapter of sociometric techniques is to appear in a guide to research methods for German social scientists.

Leo Katz to whom sociometric methodology owes a considerable debt, has come forth with a duplicated report on "Recent Advances and Some Unsolved Problems of Sociometric Theory" (Michigan State College Research Memorandum, 1952), supplemented by the author in a paper on "Sociometric Statistics" delivered to the 50th Annual Conference of the American Sociological Society (August 30-September 2, 1955, Washington, D.C.). Another research memorandum was devoted to probability analysis in sociometry by Nehnevajsa ("Probabilistic Analysis in Sociometry", University of Colorado Research Memorandum No. 6, 1954).

Thus, at this time, a complete review of the literature exists in a number of rather scattered sources, but no single source is exhaustive. Sociometrists interested in research have largely ignored theory and therapy; many

sociometric therapists have started to view research as an "overintellectualization". In his discussion of trends in the field ("Old and New Trends in Sociometry", SOCIOMETRY, Volume 17, May 1954), Moreno distinguishes between the laboratory, community, and observation approaches on one hand, and between revolutionary, cold, and perceptual sociometry on the other hand. The "introversion of the sociometric test" (whereby the subject expresses his anticipation of choices coming to him, and/or estimates the choice behavior of other members of his group) has added a "new dimension" to sociometric research since Moreno's contribution in "Sociometry in Action" (SOCIOMETRY, Vol. V, 1942). At Harvard, Renato Tagiuri and Robert Bales have continued pioneering work along these lines (a number of reports has been published with others still awaiting publication). In a yet-to-be published study of Miyamoto and Dornbusch at the University of Washington, methodological attempts are made to relate perceptions of subjects to their own choice-behavior in order to get at a more efficient operational clarification of social roles.

Specialization within the field becomes a byproduct of its tremendous growth; very few scientists can call themselves eclectics in sociometry, hence, the emphasis here on research, there on sociodrama and psychodrama —with but occasional attempts to blend the two sociometric branches. Moreno's call for an integrated approach has largely been disregarded, usually under the pressure of the floods of materials available to the scientist today.

Further differentiation sets in with the emerging popularity of the work of Kurt Lewin (whose interest in small groups seems to date back to about 1935 as one may construe from an excellent bibliography published in conjunction with an in memoriam article on Lewin by Ronald Lippitt—SOCIOMETRY, 1947).

Group dynamics emerges as a philosophy of adjustment (quite evidently related to the "other-orientation," in Riesman's terms, of the contemporary American culture, to the rise of the power of the peer-group) as well as a field of research. As a technique for betterment of human relations, the group dynamicists tend to employ role-playing—a sub-form of psycho- and socio-drama. As a research tool, the group dynamicists have used the sociometric test, the sociometric-perception test, but also interaction analysis based on categorization of observed verbal behavior; Moreno had (for example, in "Foundations of Sociometry" (SOCIOMETRY, Volume 4, February 1940) argued that *mere* observation of interaction forms does not, necessarily, reveal the underlying configuration resulting from the flow of tele (along the aversion-affection continuum) which can best be gotten at

by the use of the sociometric test and psychodrama. *He argued that research, whether under laboratory or in situ conditions, must appear of consequence to the subjects—thus questioning the validity of data obtained when the subjects are themselves not involved in the outcome of the research. In so many words, one might rephrase his argument as meaning that research data will tend to be valid (with least respondent error) only when the study is seen helpful or potentially helpful to the respondent.* Yet, laboratory experimentation has grown in quantity and importance—the work of Bales and Mills and Tagiuri at Harvard, Swanson and others at Michigan, Rose, Gibb and others at Colorado, and several other centers.

Two newer volumes set out to provide a much needed link between sociometry and group dynamics. The book on *Group Dynamics* by Cartwright and Zander (editors, Row, Peterson and Company, 1953) cuts decisively across both approaches. The trend toward synthesis is even more evident in the Reader edited by Hare, Borgatta and Bales (*Small Groups*, Alfred Knopf, 1955).

The differentiation of emphases in sociometry has, for a while, settled the question of a definition of the field. The broad definitions (though desirable) offered by Moreno, Sorokin, Lundberg and Chapin have been gradually narrowed down in practice to the works of sociometrists who employ the sociometric test, psychodrama and sociodrama, with group dynamics specializing in laboratory observational research, and in "group process" (a concept often used, yet very difficult to pin down).

Within sociometry then, we find scholars with chief interests in *theory;* others who have advanced the frontiers of *group psychotherapy;* others, who have been the providers of *new research techniques*—especially in regard to methods; and still others, who have been predominantly active in *substantive research*—that is research for the sake of its content.

E. Sociometric Theory

Basic to the growth of sociometric theory have been the concepts of "choice", "spontaneity", "creativity", and "the moment". Within the normatively structured social system, functioning through a set of more-or-less well defined social roles, the individual actors make clearcut choices. These choices are socio-emotional in texture; the actors like alters, they dislike other alters; they attach themselves to objects; they relate affectively to symbols. A theoretic system suggested in Leopold von Wiese's associative and dissociative processes and their products is not only envisaged in sociometry but also rendered measurable. Moreno theorizes about, and meas-

ures, an underlying depth dimension of our formal social system, a dimension consisting of affective relationships cutting across the institutionally defined structures—sometimes compatible, and often incompatible with them. In many of his writings, the founder of sociometry describes the discrepancy between the official society and its depth dimension as conducive to social conflict, perhaps, crucial to it. Not like in the existential philosophy in which the idea of choice is equated with the notion of a perpetual anguish Moreno sees in the process of choosing a positive force whereby men assert themselves *spontaneously,* wherein they exercise their right to a free society. That is why, to Moreno, choosing does not fill men with anxiety and a feeling of futility but rather, like Frank Lester Ward, choosing is the prime factor in the telic growth of mankind toward its goals.

Giving due credit to Bergson and his notion of "elan vital", Moreno develops his theory of spantaneity. A fascinating discussion of the socialization of the infant ("Spontaneity Theory of Child Development", SOCIOMETRY, Vol. 7, May 1943) goes to point out the "latent genius" of the human baby who is capable to overcome fantastic odds following the trauma of birth. Unless spontaneous, unless there is some measure of the s-factor (as spontaneity comes to be designated), the infant could not even survive; the s-factor is seen topologically located somewhere between the hereditary and environmental factors, yet, different from them.

Socialization of the infant which proceeds, in sociometric theory, through the first universe in which social and psychosomatic roles are blended together to a differentiation between these two sets of roles, and to the suppression of spontaneity by the adoption of stereotype behaviors, paralyzes the human being. It is seen as having a crippling effect upon the latent genius of humanity—hence, Moreno's emphasis on spontaneity training, on the revitalization of the force which promotes inventiveness and creativity most.

Sorokin in his articles on spontaneity and creativity (an assessment of Moreno's theories: "Concept, Tests and Energy of Spontaneity-Creativity", SOCIOMETRY, Vol. 12, August 1949; and "El Supraconsciente", *Revista Internacional de Sociologia,* Vol. 11, January-March 1953) emphasizes creativity as a developed form of spontaneity. The spontaneity test, and spontaneity training, are developed on the psychodrama and sociodrama stages.

> "Spontaneity and creativity are not identical or similar processes. They are different categories, although strategically linked. In the case of Man his s may be diametrically opposite to his c; an individual may have a high degree of spontaneity but be entirely uncreative, a spontaneous idiot."
>
> (*Who Shall Survive?*, 1953, p. 39)

Creativity is defined only operationally and pragmatically—by its results. It is an element X (above citation, p. 45); in "order to become effective, it (the sleeping beauty) needs a catalyzer—spontaneity". The indicants of the interaction of spontaneity-creativity are the various forms of the *warming-up process*—the products of the interaction become cultural conserves, that is, products of spontaneous-creative endeavors become accepted as a part of culture.

According to sociometric theory, the moment is a dynamic category of the situation, not a mere time-sequence. It is imbedded in the "philosophy of the moment"—the situational here-and-now. ("The Philosophy of the Moment and the Spontaneity Theatre", SOCIOMETRY, Volume 4, May 1940): hence, in sociometry, one studies in *statu nascendi*—in the state of birth of the situation.

Referring to *psychodrama,* Moreno states in 1923:

"Das gesammte Werk entsteht vor allen Augen, status nascendi". (*Das Stegreiftheater,* p. 23.) Trsl: "The entire production emerges before all eyes, status nascendi."

Moreno writes in 1932:

"Our approach has been that of direct experiment; man in action, man thrown into action, the moment not part of history but *history as part of the moment*—sub species momenti". (*Application of the Group Method to Classification,* New York, 1932, p. 21.)

He writes again in 1933:

"We study individuals just when they enter spontaneously into relationships which lead to the forming of groups, *sub species momenti.* We study these spontaneous reactions in the initial stage of group formation and the organized attitudes developed in the course of such organization. We are *present* during the "trauma" of birth and attempt to foretell the future." (Psychological Organization of Groups in the Community, Proceedings of the American Association on Mental Deficiency, Boston, 1933, p. 24.)

In 1940, writes Kurt Lewin confirming Moreno's position:

"According to field theory, behavior depends neither on the past nor on the future but on the present field." (*Field Theory in Social Science,* 1951, p. 27.)

In this fashion, the philosophy of the moment enters also group dynamics. The psychological past and the psychological (anticipatory) future are, or course, ingredients of the here-and-now, but a situation can meaningfully be investigated when it happens, and as it happens.

F. Role Theory and Role Playing

The two chief exponents of role theory have been George Herbert Mead and J. L. Moreno. There is hardly a greater difference imaginable as between Mead, lecturing at the University of Chicago on the social significance of role taking (1911-1925), and J. L. Moreno, experimenting with groups of role players in the Viennese gardens leading up to the opening of the Stegreiftheater (1911-1924). Mead's primary emphasis was the "role taking process" as it becomes manifest in the shaping of social institutions and organized response, the finished social product. (G. H. Mead: "Mind, Self and Society" 1934, p. 26). Moreno started in contrast to Mead at the opposite end with the critique of the finished product and the "role conserve"; he started with the study of the "status nascendi" of social relations. It is because of the conflict he discovered between the self of the subject and the official roles in which he was cast that he introduced role playing as a potential corrective. ("Die Rolle steht ihm als Individuum *gegenüber"—Das Stegreiftheater,* 1923, p. 27. "The roles are alien to him as a private individual". See also "The Spontaneity Theory of Child Development", 1944, Sociometry, Volume VII). Moreno's role theory is therefore closely linked to spontaneity and creativity; the Meadian role theory is linked to social conserves—it would never have led to the invention of role playing and to the experimentation with groups of role players. He did not attempt to "change" the role structure of a given culture but to explain it.

A characteristic phrase of Mead, 1934: "There are, then, whole series of such common responses in the community in which we live, and such reponses are what we term "institutions". The institution represents a common response on the part of all members of the community to a particular situation." (*Mind, Self and Society,* p. 261)

A characteristic phrase of Moreno, 1934:

"Social life has the tendency to attach a definite role to a specific person so that this role becomes the prevailing one into which the individual is folded." "Everybody is expected to live up to his official role in life—a teacher is to act as a teacher, a pupil as a pupil, and so forth. But the individual craves to embody far more roles than those he is allowed to act out in life. It is from the active pressure which these multiple individual units exert upon the manifest official role that a feeling of anxiety is produced." Role playing is then a method of liberating and structuring these unofficial roles. (Pp. 325, 326, *Who Shall Survive?* 1st Edition.)

G. Theory of Social Configurations

The empirically established observation that the choice-relations of individuals do not occur as-if-by-chance, as well as the finding that the discrepancy between the official society and its depth structure does indeed exist, leads to the theory of the tele factor, t-factor. Tele is the flow, to and fro, of affectivity between individuals—an important force to determine the manner in which men relate to each other.

Moreno has differentiated between *projective* and *retrojective* portions of the tele; Loomis and Proctor (in Jahoda, Deutsch and Cook, Volume 2) outlined the six basic types of dyadic relationships between two individuals depending on the direction of each of these tele portions (negative, neutral, positive). Lewis Yablonsky ("A Sociometric Investigation Into the Development of an Experimental Model for Small Group Analysis", Sociometry, Volume 15, August-November 1952) expands the dyadic types of tele; in his structural patterns, Yablonsky includes also perceptual sociometric relationships interconnecting thus the analysis of the sociometric test data with the data obtained by the use of the intraverted sociometric test in perceptual sociometry.

The tele is not entirely unstructured; in fact, it is defined in terms of different forms of association—it relates to *criteria of choice,* thus varying from one activity to another at least to some extent. The importance accrued (by Moreno, Jennings, Criswell) to specificity of choice-criteria in sociometric research dates back to the observation of differences in tele from activity to activity (the Hudson Project; reported for example by Jennings in *Sociometry of Leadership, Sociometry Monograph; Leadership and Isolation,* 1948; and, of course, by Moreno in *Who Shall Survive?,* 1934).

When both portions of the tele are of the same direction, Moreno speaks of a *simple tele,* whereas *infra-tele* is defined by differential directions; such tele results when one of the subjects misperceives of the other person's feelings toward him.

Tele also varies in intensity. Technically, the tele-intensity may be investigated by the method of ranks (whereby respondents express their first, second . . . nth choices), by the method of paired comparisons (in which all combinatory pairs of individuals in the group are given to each subject for an expression of preference for one of the members of each pair), and by the method of a calibrated scale (thermometer). Several sociometrists have greatly contributed to the development of methods for the meas-

urement of tele intensity: Merle E. Bonney, Leslie D. Zeleny, Vladimir Cervin and others.

Helen H. Jennings has suggestively proposed the differentiation of tele, and of groups subsequently, in terms of *kind*: she distinguishes between the psyche-tele and the socio-tele, one pertaining to private criteria of sociation, the other relevant to collective, or task-oriented sets of criteria. Her theoretical contribution is grounded in research and psyche-tele and socio-tele are concepts coined to describe the systematic difference in configurations when private versus collective criteria are used in the sociometric test. ("Sociometric Differences of the Psychegroup and the Sociogroup", SOCIOMETRY, 10, February 1947). The psychegroups tend to be consistently *smaller,* with the members linked to one another in mutual positive relations, they last longer—that is, endure over a longer period of time; individuals are selected into the psychegroups due to their fitness into the group rather than for their ability to affect the climate of the group. The reverse observations apply to the sociogroup.

An important theory of the tele deals with the referent entity. Moreno discusses tele for *persons* as opposed to tele for *objects*; and finally, tele for *symbols*. Therefrom dates his ideal-type (in the Weberian sense) classification of societies: an emotional panacea (where tele for persons suppresses completely the tele for objects), a technological panacea (where persons are merely carriers of objects and tele relates to objects only), and the Buddhistic panacea—with both the tele for objects and the tele for persons suppressed. ("Organization of the Social Atom", *Sociometric Review,* 1936.) Thus each person is seen by Moreno as having a certain quantity—somewhat variable over time—of tele; this total quantity of available t can be distributed between persons and objects—tele for persons and tele for objects are then complementary.

Each actor is related to numerous individuals under each of the possible criteria of sociation. The fabric of his tele-relations with others has been called in sociometry his *social atom* (first mentioned in 1932 explicitly in Moreno's "Application of the Group Method to Classification" (p. 102) mentioned previously (Section B). The social atom has two perspectives, the *psychological*—the person *and* his relationships with others, and the *collective*—the smallest part of human society. The social atom has a nucleus of consumated mutual (positive and negative) relations—individuals with a considerable number of relationships in the nucleus have been called having a high tele range (by Paul Deutschberger in "Tele Factor: Horizon and Awareness", SOCIOMETRY, Volume 10, August 1947). The next layer

of the atom includes the individuals to whom the focal individual feels related; it is separated by a social threshold from the outer layer of the acquaintance volume consisting of persons about whom the subject feels indifferently, and/or who are related to him without his awareness of the fact. An "imbalanced social atom" (Moreno) is typical of individuals with a "low tele range" (Deutschberger). But more so: it is diagnostically typical of individuals with inadequate social relations.

Since the social atom changes over time, considerable interest has been attached to the study of changes in the atom—especially by Moreno ("Social Atom and Death", SOCIOMETRY, Volume 10, February 1947) and Helen Jennings ("Experimental Evidence on the Social Atom at Two Time Points", SOCIOMETRY, Volume 5, May 1941). Mouton, Blake and Fruchter have overviewed the changing social atom in studies by others from the platform of reliability—consistency of choice-behavior of subjects ("The Reliability of Sociometric Measures", SOCIOMETRY, Volume 18, February 1955).

> "Every individual, just as he is the focus of numerous attractions and repulsions, also appears as the focus of numerous roles which are related to the roles of other individuals."
>
> ("Psychodrama Treatment of Marriage Problems"—SOCIOMETRY, Vol. III, 1940)

The conceptual fabric of these role-relations gives rise to the idea of the *cultural atom* the graphic expression of which is the role-diagram (Zerka Toeman, "How To Construct a Role Diagram", *Sociatry*, Volume 2, 1948-9).

The social atom is bounded by specific criteria of association; the cultural atom has a specific culture as its referent, the role-relationships which are reducible to the axio-normative order of a society. The study of these atoms and their interrelations is seen of immense importance in the investigation of psychopathology of interpersonal relations; hence, it is of great significance in any attempt to understand, and modify, personality disorders in as much as they stem from imbalances in the social atom, or poor adjustment between the social atoms and the cultural atom of an individual.

Several social atoms combine into social molecules; these become the more complex socioids and classoids (Moreno). Finally, the *psychosocial network* is defined as the fabric of all sociometric relationships in a community. The riverbeds through which psychological currents flow have initially been charted and discussed in studies of information and rumor spreading by Moreno in his Hudson Experiments (1934), by Charles P. Loomis in "Sociometrics of Rural Communities" (SOCIOMETRY, Vol. II, 1939), in

the Revere Project directed by Stuart C. Dodd under a U.S. Air Force contract reported in numerous articles. A typology of communities was suggested in terms of the psychosocial networks prevailing in them; in some cases, numerous relations will link a community with other communities, with the whole nation—with humanity at large. Some individuals within a community will be left outside of the networks—some will belong to but one.

The great contribution to sociology of Emory Bogardus with his measurement and theories of *social distance* is thus placed into a new light. Moreno and Bogardus have provided the basic theoretical concepts as well as techniques of measurement; not unrelated to this development are the exciting mathematical models of communications spreading proposed by Winthrop (in a dissertation at the University of Washington) and mainly by Anatol Rapoport (for example, "Spread of Information Through a Population with Socio-Cultural Bias, Parts I, II and III", *Bulletin of Mathematical Biophysics,* Volume 15, 1953).

Moreno ("Foundations of Sociometry", SOCIOMETRY, Volume 4, February 1940) and Nehnevajsa ("A Sociometrist's Remarks on the Soviet Purges", SOCIOMETRY, Volume 18, August 1955) employed the sociometric network theory to attempt to explain the occurrence of large-scale purges in the Soviet Union; this use of the sociometric theory is still in its infant stage—many problems in international relations may yet be tackled by sociometrists. It should be in part the task of the new journal, *International: Sociometry, Group Psychotherapy and Sociodrama,* to explore the hitherto unexplored areas.

H. SOCIOMETRIC THEORY: ITS MEANING

Many aspects of sociometric theory have been clarified in discussions between various sociometrists. Georges Gurvitch ("Microsociology and Sociometry", SOCIOMETRY, Volume 15, 1-2, 1952), Johnson ("Theology of Interpersonalism", SOCIOMETRY, Volume 12, 1-3, 1949), Margaret Mead ("Some Relations Between Cultural Anthropology and Sociometry", SOCIOMETRY, Volume 10, November 1947), and Rene Zazzo ("Sociometry and Psychology", SOCIOMETRY, Volume 12, 1-3, 1949) have initiated many worthwhile arguments.

In part, sociometric theory is firmly based on research findings. To some extent, it is speculative in character. Thus it has proven to be fertile grounds not only for theoretical dialectics but also for the formation of relevant hypotheses with the testing of which the theory stands and falls.

The theoretical concepts, such as the "social atom", "psychosocial net-

works" are real to the same extent to which other similar constructs are real; they do describe, mostly with considerable precision, that which they are designed to describe; they are a challenge to imaginativeness of the scientists; a soil for the fermentation of meaningful questions about human behavior.

The major aspiration of sociometry, to study all of humanity due to the fact that the tele-relations link all mankind in some fashion, has, of course, not been fulfilled. In this regard, Margaret Mead's criticism is quite warranted: she is perturbed by the study of *closed social systems* as if it had been established that for the situational analysis of a given social system the relations of the system with other groups, and of other groups with the system, are not fundamental.

While one may agree with this criticism (and Moreno with his visions of *wholeness* would likely be the first one to concur with Mead), it is equally clear that most of our research in the behavioral sciences has been of this nature. The frame of reference, or the level of abstraction, determines the experimental closeness of a system—with numerous external variables of vital importance at work, yet inaccessible for study. When Parsons (*The Social System,* 1953) discusses the differential analytical levels for the study of the personality system, the social system, and the cultural system, he says no more than that it is crucial to clearly define one's closed system of study and that it is disastrous to confuse the different levels. Similarly, we may look at the fabric of formal social roles and come out with sociology of institutions or with stratification analysis (when we cut across the social system vertically); or, we may analyze the depth dimension by sociometric techniques—and, on occasion, the relationship between the two. An advancement in the study of the relationship between the formal and sociometric structures has been made with the proposal for a multi-relational analysis by Massarik, Tannenbaum, Weschler and Kahane ("Sociometric Choice and Organizational Effectiveness: A Multi-Relational Approach", SOCIOMETRY, 16, 1953).

I. SOCIOMETRIC THERAPY

For the first time in the history of psychotherapy, the measurement of interpersonal relations is attempted, therapeutic *change* in the behavior of individuals and groups is *measured.* (Sociograms before and after, *Who Shall Survive?* 1934.)

The use of sociometry in social healing can be discussed along several lines. On one hand, their shuffling of groups can be made on the basis of

sociometric data (Assignment therapy); on the other hand, the psychodrama and sociodrama stage are the vehicle for diagnosis of individual and social problems, and at the same time, instruments of healing. The acting out of situations by subjects has the effect of mental and social catharsis; it improves the ability of individuals to correctly perceive of their roles with regard to alters—or, as one would say, it trains them toward spontaneity.

In numerous writings, Moreno has explained the advantages of psychodrama over classical psychoanalysis and Gestalt Theory ("Notes on Sociometry, Gestalt Theory, and Psychoanalysis", 1933—in Psychological Organization of Groups in the Community). As to Gestalt Theory: "Sociometry accomplishes the thing which the Gestalt theory does not approach; it studies expression and organization in relation to the act or acts which produces them. We never consider Gestalt separated from the creative act." . . . "The sociometrist does not deal in 'Gestalts'—he is the framer of a Gestalt himself."

As to psychoanalysis: "The role of the analyst changes into the role of a co-actor; the verbal communication supplied by a patient from his couch is supplemented by movement and gesticulation which the acting-out alone permits; interaction replaces one-way communication."

Whatever the pros and cons of sociodrama and psychodrama may have been, one fact remains: since the 1923 days of Stegreiftheater in Vienna, the method has been so generally accepted that, under various names, it is in constant use by psychiatrists, clinicians—private, as well as in hospitals. Before Moreno, the notions of the importance of groups and group relations in healing were generalized observations; what forces were at work in groups escaped the attention of the older writers. In its modern form, group psychotherapy begins with the application of sociometric method to problems. A few years after the opening of the first American theatre of psychodrama in Beacon (1936), some fifty hospitals (with St. Elizabeths Hospital leading the way—where the theatre of psychodrama is now directed by James Enneis, one of psychodrama's outstanding directors) have adopted the techniques. At this time, we may report the opening of the first psychodrama theatre in India, as well as considerable successes of the French psychodramatists—Serge Lebovici, Mireille Monod, Robert Diatkine. Harris has reported the uses of sociometric techniques in selection of British officers during World War II, Ansbacher ("Lasting and Passing aspects of German Military Psychology", SOCIOMETRY, Vol. 12, Dec. 1949) discusses the application in Nazi armies; the report of the Office of Strategic Services ("Assessment of Men") points out the employment of sociodrama in the se-

lection of special personnel during the war in the United States. Sociodrama appears to be an integral part of the program developed by the RAND corporation for crews manning radar stations. A long list of industries might be supplied in which sociometric therapy is playing a part of everincreasing importance.

It is, as already pointed out, not only psychodrama and sociodrama that have been used as instruments of therapy: the sociometric test and sociometric research when applied to groups *in situ* with choice-criteria pertaining to activities in which the subjects are vitally involved has had therapeutic effects as well. We can easily differentiate between sociometric research designed solely for the purposes of hypotheses testing and sociometric research with explicit or implicit therapeutic undertones. While it is quite likely that the administration of a sociometric test always leads to some form of restructuring of a group, that is, has some effect on the respondents, we wish to mention here but the studies more or less explicitly conducted with therapy as their major aim.

Mittendorf (1916) opens the era; Beacon (1932) follows, putting the Mittendorf plan into action: prospective settlers are asked to select their eventual associates. Their selections *matter* (hence expectation of honest responses)—the decision the subjects will make may influence considerably their future. In 1936, Moreno presents a plan for regrouping of communities (*Sociometric Review*, 1936); in the following year, Shepard Wolman reports the use of sociometry in community planning ("Sociometric Planning of a New Community", SOCIOMETRY, Volume 1, 1-2, 1937). In 1938, Loomis and Davidson come with their research-therapeutic work on the community level ("Social Agencies in Planned Rural Communities", SOCIOMETRY, Volume 2, August 1938; "Sociometric Study of New Rural Communities", SOCIOMETRY, Volume 2, February 1938). Great contributions have been made by Henrik Infield—in his "Social Control in a Cooperative Society" (SOCIOMETRY, Volume 5, August 1942), "Cooperative Community at Work" (Dryden Press, 1945), "The Use of the Sociometric Test in Cooperative Community Research" (Proceedings of the 14th Congress of Sociology, Rome, 1950), "Cooperative Community and the Sociometric Test" (*Cooperative Living*, 3, 1951)—and other writings. In 1943, Rose Cologne ("Experimentation With Sociometric Procedures in a Self-Help Community Center", SOCIOMETRY, Volume 6, February 1943) and Muriel Brown ("Some Applications of Sociometric Technics to Community Organization", SOCIOMETRY, Volume 6, February 1943) join the group of scholars interested in therapeutic sociometry; Irwin Sanders offers a plan for effective community action

("The Use of Block Leaders in Effective Community Mobilization", SOCIOMETRY, Volume 12, December 1949).

All these studies have two things in common: *sociometry* is used, and secondly, it is assumed—in the line with the democratic philosophy of life—that communities organized in compatibility with the informal sociometric wishes of the inhabitants, or prospective settlers, will function better.

Numerous sociometrists follow Moreno's early work with children in Vienna, and the Hudson Project of the 30's. Pioneering discussions were initiated by Leslie D. Zeleny ("Sociometry in a Classroom", SOCIOMETRY, Volume 3, February 1939)—with Moreno's explicit discussion of this subject in 1942 (SOCIOMETRY, Volume 6). Daniel Cooper realizes the potentialities of sociometry for school administrators (SOCIOMETRY, Volume 10, May 1947); once again, Nahum Shoobs writes on "Sociometry in the Classroom" (SOCIOMETRY, Volume 10, May 1947). In 1950, Leslie Zeleny ("Adaptation of Research Findings in Social Leadership to College Classroom Procedures", SOCIOMETRY, Volume 13, December 1950), and Levy and Osten ("A Sociometric Approach to Teacher Training", SOCIOMETRY, Volume 13, August 1950) contribute to the growth of applied sociometry; the value of the techniques is outlined by Atkinson ("The Sociogram as an Instrument in Social Studies Teaching and Evaluation", *Elementary School Journal*, 1949-50, 74-85). In France, Goguelin discusses the successes of the sociometric method among apprentices ("Recherches sur les resultants du test sociometrique de Moreno dans un centre d'apprentissage", *Travail Humain*, 1951, 14, 228-242); in America, Frances Todd joins the discussions of Atkinson, Zeleny, Levy and Osten and others ("Democratic Methodology in Physical Education", SOCIOMETRY, Volume 14, May 1951). Merle Bonney who in many ways added to sociometric methodology, substantive research, as well as applied sociometry, has been preparing a major volume on "Sociometry in Education", a work which should be complementary to the book by Robert Haas "Psychodrama and Sociodrama in American Education" (Beacon House, 1948). The relation of "Accident-proneness" to sociometric status has been discussed by Moreno and Blake (Army), Fuller (education) and Speroff (industry).

Problems related to various aspects of the work-situation have similarly attracted both the researchers and the researchers-therapists. Joan Criswell discusses the uses of the technique in personnel departments (SOCIOMETRY, Volume 12, December 1949); Orden Smucker goes into the guidance possibilities of sociometry ("Near-Sociometric Analysis as a Basis for Guidance", SOCIOMETRY, Volume 12, December 1949). The works of John Jacobs (SOCIOMETRY, Volume 8, May 1945), Paul Maucorps in France (*Revue du*

Travail, 1950), Moreno and Borgatta (SOCIOMETRY, Volume 14, 1951) and Wechsler, Tannenbaum and Talbot (1952) must be mentioned when one thinks of sociometry applied to industrial settings.

The great promise of sociometry for the organization and functioning of the Armed Forces was clearly envisaged by Leslie Zeleny ("Selection of Compatible Flying Partners", *American Journal of Sociology,* Volume 52, 1947); the interest of the various research organizations within the Armed Forces has been attracted once and for all—to be underscored by the signing of numerous research contracts by the Human Resources Research Institute of the U.S. Air Force and the Office of Naval Research; both of these groups have, indeed, done much to promote the growth of sociometric research, and specifically, research in small groups.

Next, sociometry comes to be applied to problems of social work and social workers. Moreno ("The Sociometric Approach to Social Case Work", SOCIOMETRY, Volume 13, May 1950), Paul Deutschberger ("Sociometry and Social Work", SOCIOMETRY, Volume 13, February 1950) and Helen Green ("Sociometry and Social Integroup Work", SOCIOMETRY, Volume 13, February 1950) have been the pioneers.

Occasionally, rather than employing sociodrama or psychodrama, therapists have utilized the sociometric test among hospitalized patients. Reports come from Newall Kephart ("A Method of Heightening Social Adjustment in an Institutional Group", *American Journal of Orthopsychology,* Volume 8, 1938), Bockman and Hyde ("Application of Sociometric Technics to the Study of Lobotomized Patients", *Journal of Nervous and Mental Disease,* Volume 114, 1951), Kegeles and Hyde ("Sociometric Network on an Acute Psychiatric Ward", *Group Psychotherapy,* Volume 5, 1952), and Benjamin Pope ("Sociometric Structure and Group Values on a Mental Hospital Service for Criminally Insane", *Group Psychotherapy,* Volume 5, 1952).

The story of sociometric therapy is far from complete. We have not mentioned the organization of the Society of Psychodrama and Group Psychotherapy (1942), the growth of the journal *Sociatry*—later to be renamed *Group Psychotherapy* (1947); the numerous psychodrama and group psychotherapy monographs in which Moreno, Zerka Toeman, Fantel, Pratt, Leary and Coffey, Lippitt, MacDonald discuss the uses of the techniques under various conditions; we have not mentioned the development of therapeutic motion pictures; we have hardly touched upon the significant contributions of men like Robert Haas and James Enneis; we have neglected here the outstanding studies of Mary Northway among preschool children (as we intend to mention them explicitly in our discussion of sociometric

research). An exhaustive summary of all this effort is clearly beyond the scope of the present paper.

One final comment may be kept in mind quite fruitfully: psychodrama and sociodrama are therapeutic instruments proper; but they have contributed towards research of small groups by supplying them with new research tools, role playing and interaction analysis. The sociometric test is primarily a research tool—but it can be profitably used to obtain data necessary for the restructuring of groups, for the diagnosis of interpersonal conflicts, and for the analysis of imbalances in social atoms of individuals, in social molecules and psychosocial networks.

J. Introduction to Sociometric Research

Research generally is neutral to the welfare of the subjects under study. In an impersonal fashion, the researcher is interested in operationally stating his hypotheses, designing conditions under which these hypotheses can be tested, and in testing them. Whether his findings will, or will not, be used to reconstruct undesirable conditions in individuals, between individuals and groups, the researcher is not interested. In this respect, the designation of pure research sociometry as "cold sociometry" (by Moreno in his 1954 discussion of "Old and New Trends" mentioned previously) seems quite appropriate.

Meaningful results ensue provided that, at least, two conditions are fulfilled: the researcher phrases meaningful questions, and secondly, he has methodological tools available which will help answer such questions. Hence, the development of adequate methodology goes hand in hand with the quest for substantive knowledge.

With little or no knowledge at first, the researcher wants to *describe* the phenomena under study, in our case, the long search for precise describing of sociometric configurations begins. As some knowledge is obtained on the sociometric patterns, the researcher is interested in *relating* these configurations to other, hopefully relevant, variables. Two questions are asked in this regard:

(a) What are the sociometric configurations (of individuals, groups) predictive of?

(b) What (variables) predict(s) the sociometric configurations?

Sociometric research is then a *body of methods* whereby the data is obtained and analyzed, and next and foremost, a *body of findings* in terms of such data. The studies may be best classified by the categories of relationships which they aim to investigate:

(1) Relationships of sociometric configurations under specific criteria to sociometric configurations under other specific criteria.

(2) Relationships of sociometric configurations to personality:

(a) structural traits—such as sex, age, race

(b) dynamic traits—such as attitudes, values

(3) Relationships of sociometric configurations to socio-cultural variables—such as income, residence, family size and background, occupation, memberships and participation patterns; social roles and the normative order.

(4) Relationships of sociometric configurations to behavior—such as voting behavior, decision-making, communications, rumor-spreading; and to processes such as cohesiveness, integration, form of leadership.

The sociometric test is the common denominator of all sociometric research; designing of projects then depends on the aims of the investigation with the sociometric test providing basic data on the configurations.

K. The Sociometric Test

> "The sociometric test has a dominant place in this book and is more thoroughly described than the other tests. This should not lead to the conclusion that it answers all questions or that it is most essential. It is only a favorable and strategic *first* (author's italics) step for the more thorough investigation of the depth structure of groups."
>
> (Moreno, *Who Shall Survive?,* 1953, p. 92)

In this volume, as well as in its preceding edition (1934), the reader finds ample information on the sociometric test. The test is described by Stuart Chapin in "Experimental Designs in Sociological Research" (Harper and Brothers, 1947), by Loomis and Proctor in "Research Methods in Social Relations" (Jahoda, Deutsch and Cook), by Borgatta and Lindzey (*Handbook of Social Psychology,* Volume 2, pp. 407-410), by Zerka Toeman ("How to give a Sociometric Test", *Sociatry,* Volume 2, 1948-9), and by Nehnevajsa ("Soziometrische Analyse von Gruppen", *Koelner Zeitschrift,* Volume 7, 1955, pp. 122-124).

In designing a sociometric test, several all-important decisions have to be made. First of all, the researcher asks himself: What criteria am I going to use? Generally, any activity in which subjects engage or potentially engage with other persons may become a test-criterion. Sociometrists have reported the employment of a wide variety of criteria which may, perhaps, be classified into several types:

Communications behavior has been frequently investigated. The criteria employed range from "chatting" with others (Yablonsky, "A Socio-

metric Investigation into the Development of an Experimental Method for Small Group Analysis", SOCIOMETRY, Volume 15, August-December 1952) to "confiding" in others (for example, in Bassett, "Cliques in a Student Body of Stable Membership", SOCIOMETRY, Volume 7, August 1944). The criteria have been developed to test children (such as reported by Mary Northway), college students (in the above mentioned study of Bassett), as well as adults (county agents and librarians, reported by Loomis and Proctor).

Various activities operationally defining *social proximity and social distance* between subjects have been similarly used. "Sitting together", choice of roommates, choice of companions for meals, "walking together", "playing together", "visiting other families" are typical examples of this class of sociometric test criteria. The studies of Wakely ("Selecting Leaders for Agricultural Programs", SOCIOMETRY, Volume 10, December 1947), Bonney ("A Study of Social Status on the 2nd Grade Level", *Journal of Genetic Psychology,* Volume 60, 1942—and many other studies by the same author published in the *Journal of Educational Psychology, Journal of Social Psychology,* SOCIOMETRY), Kuhlen and Bretch ("Sociometric Status and Personal Problems of Adolescents", SOCIOMETRY, Volume 10, May 1947), and Medalia ("Unit Size and Leadership Perception", SOCIOMETRY, Volume 17, February 1954—as well as other studies resulting from a U.S. Air Force Contract for the so-called Project Air-Sites in which Delbert C. Miller and Nahum Z. Medalia employed sociometric techniques widely), will serve as examples of this approach. The criterion of inter-family visits has usually been connected with investigations of whole communities, George Lundberg's and Steel's famous study ("Social-Attraction Patterns in a Vermont Village", Part I and Part II, SOCIOMETRY, Volume 1, 1-2, 1937 and Volume 2, 3-4, 1937), the works of Loomis and Davidson of rural communities, and of Loomis and Powell in Rural Costa Rica (studies published in SOCIOMETRY, Volume 2, February 1938; and SOCIOMETRY, Volume 12, February-May 1949 respectively) must be mentioned here. An excellent monograph (also published as an article in Volume 9 of SOCIOMETRY) comes from the pen of Charles Loomis on the analysis of political cleavages in a Hannoverian village.

In many studies, *"friendship" configurations* have been studied specifically—on occasions using the somewhat vague description of "Who are your best friends" leaving the interpretation of "friendship" up to the subjects. We find the friendship criterion used by Bonney (in studies which we have already mentioned), Wherry and Fryer ("Buddy Ratings: Popularity Con-

test or Leadership Criteria?", SOCIOMETRY, Volume 12, February-August, 1949), Orden Smucker ("Dormitory Cliques and Interpersonal Relations", *Autonomous Groups Bulletin,* Volume 6, 1951), Radke, Sutherland and Rosenberg ("Racial Attitudes of Children", SOCIOMETRY, Volume 13, May 1950), Elfrieda Höhn and Christoph Schick ("Das Sociogram", Stuttgart, 1954).

Work-activities of subjects cut clearly across both the formal social structure and the sociometric depth-dimension. The wishes of individuals in terms of their socio-affective relatings are often in conflict with the institutional pattern. Ample attention has been given by sociometrists to the study of configurations by tests designed to investigate forms of association under various criteria of work. Of the researches already mentioned in other contexts, those of Wakely, Bassett, Yablonsky, Bonney and Kuhlen and Bretch need to be mentioned again. Papers of Stogdill ("The Sociometry of Working Relations in Formal Organizations", SOCIOMETRY, Volume 12, November 1949—SOCIOMETRY, Volume 14, November 1951) and Goodacre ("The Use of a Sociometric Test as a Predictor of Combat Unit Effectiveness", SOCIOMETRY, Volume 14, May-August, 1951; "Group Characteristics of Good and Poor Performing Combat Units", SOCIOMETRY, Volume 16, May 1953), as well as the newer works of Speroff ("Job Satisfaction and Interpersonal Desirability Values", SOCIOMETRY, Volume 18, February 1955) and Christner with Hemphill ("Leader Behavior of B-29 Commanders and Changes in Crew Members' Attitudes Toward the Crew", SOCIOMETRY, Volume 18, February 1955) must be added to the list.

The next problem connected with the design of a sociometric test relates to the manner in which the criterion-questions, once the criteria are chosen, will be worded. In this manner, we find studies employing the *level of recall* —that is, asking the respondents to report on their past associations with others. The Vermont study of Lundberg and Steel, the studies by Medalia and Miller and Medalia have been of this type. Next, each criterion-question may be worded on the *actuality level*: it refers to anticipation on the part of the subjects of actual realistic associations. The respondent realizes that his answers to the sociometric test might affect a real situation in the near future. Moreno had, some time ago, designated most other approaches but the one on actuality level as "near-sociometric" or "pseudo-sociometric". Actuality-level questions were asked in all the studies in which therapy was also involved: that is in all researches which were designed to obtain data in order to help restructure the referent population—we mention works of Wolman, Wakely, Loomis and Proctor, Loomis as outstanding examples.

Finally, questions may be *hypothetical.* The respondent is asked to put himself into an imaginary situation, into an as-if setting.

Still another decision must be made. The researcher determines the *number of questions.* He considers the needs of the study, the time available to the respondents, the budget, the willingness of the subjects, the amount of additional types of data which he will need. The pollsters have assembled much material, and acquired much experience, as to optimum lengths of interviews: but the findings vary with some stating that many subjects are willing to be tested for hours, while others react negatively after but several minutes.

Four more decisions remain to be briefly outlined: the researcher decides whether the sociometric test will include the positive direction only, or the negative only, or both. Sociometric literature up-to-date does not provide us with clues about the possible distorting effect*** of negative-direction questions (whom do you like lease to do . . . x . . . with?) on the responses to the test.

Sociometric tests differ also to the extent to which the subjects are expected to react to a preannounced number of other subjects, to an unlimited number of subjects, or to all subjects in the referent population.

A decision must be made regarding intensity-testing. Once the decision is made to test not only the direction of tele (negative, neutral, positive) but also its intensity, the selection of a technique for the investigation of intensities still remains. Bonney in his papers has suggested several equidistant verbal scales, Vladimir Cervin an interesting scale of cooperativeness-to-competitiveness ("A Dimensional Theory of Groups", SOCIOMETRY, Volume 11, 1948).

Finally, we may distinguish (following Moreno) between "horizontal" and "vertical" sociometric tests. The horizontal test does not inquire into the reasons for respective choices; the vertical test does.

In our remarks on the sociometric test, we have avoided mentioning the works of sociometrists who have used practically all the techniques of designing the test. Foremost, Moreno has developed and used all these methods; his relevant writings are far too numerous to be listed here. Helen Jennings and Joan Criswell have similarly employed practically all these methods, as has Mary Northway. With the emergence of *perceptual sociometry* a new issue has necessitated action on the part of the researcher: does one want to invert the sociometric test, regardless of its form, and investigate

*** See Lundberg in this volume.

the anticipations of choices of the subjects? The studies of Tagiuri at Harvard, and Gronlund's report ("Sociometric Status and Sociometric Perception", SOCIOMETRY, Volume 18, May 1955) may be mentioned. In the last two years, quite a few studies of this type have appeared. Edgar Borgatta ("Analysis of Social Interaction and Sociometric Perception", SOCIOMETRY, Volume 17, February 1954), Herbert Schiff ("Judgemental Response Sets in the Perception of Sociometric Status", SOCIOMETRY, Volume 17, August 1954), Erling W. Eng ("An Approach to the Prediction of Sociometric Choice", SOCIOMETRY, Volume 17, November 1954), and Edward Gottheil ("Changes in Social Perceptions Contingent Upon Competing or Cooperating", SOCIOMETRY, Volume 18, May 1955) may be singled out.

This new development in sociometric research appears promising indeed. The relationship between accuracy of perceptions and the sociometric status of an individual accorded to him by others will further refine the theory of psychopathology of social relations, as well as provide additional clues to the understanding of human behavior.

L. DATA COLLECTING, LABORATORY AND FIELD

Enrichment of sociometric methodology is also connected with the where, and how, to collect data—once the sociometric instrument has been designed.

Most sociometric projects have been done *in situ*. They are field studies. The researchers approach their populations in actual settings. But laboratory techniques have been used with increasing frequency. The experimenter creates experimental groups as anticipated by Moreno in his Stegreif laboratory (1923) for the sole purpose of studying them so as to maximize his chances of control over many possible intervening variables, as well as to single out particular variables for the study. An excellent treatise by Guy Swanson ("Laboratory Experiments with Small Populations", *American Sociological Review,* June 1951) has served as a guide to a number of small group researchers. Leon Festinger has outlined the problems, and purposes, of laboratory research (in Festinger and Katz, *Research Methods in the Behavioral Sciences,* 1953, Chapter 4). Reva Potashin ("A Sociometric Study of Children's Friendships" SOCIOMETRY, Volume 9, February 1946) organized small groupings of children in a laboratory setting; Matilda Riley ("Scales Applied to Dyadic Relationships", SOCIOMETRY, Volume 13, February 1950) anticipates the publication of *Sociological Studies in Scale Analysis* (Rutgers University Press, 1954) by Matilda Riley, John Riley and Jackson Toby. Northway's research on "Outsiders" (SOCIOMETRY, Volume 7, Februray 1944), Sherif's "An Experimental Approach to the Study of

Attitudes" (SOCIOMETRY, Volume 1, February-May 1937), and Lewin's and Lippitt's wellknown study of autocratic and democratic leadership ("An Experimental Approach to the Study of Autocracy and Democracy", SOCIOMETRY, Volume 1, August-December 1937)—all are conducted under laboratory conditions.

The "where" of sociometric research then presents us with a dichotomous choice: in the field or in a laboratory, each approach having some distinct advantages and some rather distinct disadvantages.

The "how" of data collecting boils down to several techniques: participant observation, or observation, mailed-in questionnaires, telephone interviews, personal interviews, administered questionnaires. Each of these methods has been tried with variable success.

Goodacre (in his military sociometric studies mentioned previously) included observational techniques to supplement data obtained by administration of sociometric questionnaires, as did Medalia in his Air Force studies. Reed Powell ("The Nature and Extent of Group Organization in a Girls' Dormitory—A Sociometric Investigation", SOCIOMETRY, Volume 14, December 1951) used participant observers, again not as primary sources of information but rather for the explicit purpose to gather additional data. Observational methods, of course, play an important role in all interaction process studies by the Harvard group.

Relative success with mailed-in sociometric questionnaires has been reported by Lundberg and Beazley ("Consciousness of Kind in a College Population", SOCIOMETRY, Volume 11, February-May 1948) and Lundberg, Beazley and Dickson ("Attraction Patterns in a University", SOCIOMETRY, Volume 12, February-August 1949). In the previously mentioned report on librarians and county agents ("The Relationship Between Choice Status and Economic Status in Social Systems", SOCIOMETRY, Volume 13, December 1950), Loomis and Proctor mailed their sociometric questionnaires to the respondents.

The telephone-interview was employed in the days of Project Revere, the research on leaflet message diffusion, in the city of Seattle by Dodd and his associates. Personal interviews were conducted in Lundberg's and Steel's study of the Vermont village; in Powell's work in Costa Rica ("A Comparative Analysis of San Juan Sur and Attirro, Costa Rica", SOCIOMETRY, Volume 14, May-August, 1951); in Foa's project among the Yemenite Jews ("Social Change among Yemenite Jews Settled in Jerusalem", SOCIOMETRY, Volume 11, February-May, 1948); and by Loomis and Davidson in their studies of agricultural communities.

In most other sociometric projects, questionnaires have been administered to populations either living together or assembled for the purposes of the test. These studies are most numerous and no specific mentions are thus warranted.

In psychodramatic and role playing research, several methods of acquiring subjects (Ss) and role players have been reported. The classic method is Moreno's training and employment of professional auxiliary egos (SOCIOMETRY, Volume 3, pp. 317—"A Frame of Reference for Testing the Social Investigator"): the use of clients in need of psychological counselling or vocational adjustment (*Psychodrama,* Volume 1, 1946): the use of voluntary students for temporary role playing tests in the course of interaction analysis.

M. GRAPHIC PRESENTATION

The *sociogram* is, of course, the most famous sociometric chart. In existence since the early days of sociometry as a method of portraying data, the sociogram is, indeed, a widely used instrument. Zerka Toeman has briefly outlined the technique of sociogram construction ("How to Construct a Sociogram", *Sociatry,* Volume 2, 1948-9), following extensive discussions by Moreno in various of his writings (the first somewhat exhaustive presentation in *Who Shall Survive?* 1934, although discussions appeared in his "Application of the Group Methods to Classification" (1932) and the reprint of Moreno's paper for the 57th Annual Session of the American Association on Mental Deficiency in 1933). Borgatta writes "A Diagnostic Note on the Construction of Sociograms and Action Diagrams" (*Group Psychotherapy,* Volume 4, 1951), Bronfenbrenner ("Graphic Presentation of Sociometric Data", SOCIOMETRY, Volume 7, August 1944) discusses the technique, the Horace-Mann-Lincoln Institute publishes a pamphlet on "How to Construct a Sociogram" (1947, Teacher's College, Columbia University).

Rather early, Mary Northway proposes an alternative technique of a modified sociogram—the target diagram ("A Method for Depicting Social Relations Obtained by Sociometric Testing", SOCIOMETRY, Volume 3, May 1940). While no computation is necessary for the construction of sociograms, the target diagram necessitates the evaluation of quartiles in terms of choice receptions by the subjects. The target diagram then consists of concentric circles into which individuals are placed according to their income of choices.

The computation of quartiles, and thus the use of the target diagram, seems particular useful whenever comparisons of sociometrically overchosen

and sociometrically underchosen subjects are contemplated. Subjects are then usually taken from the upper quartile and compared with subjects with a sociometric status falling into the lower quartile. Northway and Widgor used the technique in their attempt to find Rorschach responses predictive of high and low sociometric statuses ("Rorschach Patterns Related to the Sociometric Status of School Children", SOCIOMETRY, Volume 10, May 1947).

A further refinement is suggested by Lemann and Solomon ("Group Characteristics as Revealed in Sociometric Patterns and Personality Ratings", SOCIOMETRY, Volume 15, February-May 1952). The authors give credit to Frederick Mosteller for the development of the *trivariate scatter,* a three-dimensional construct in which individuals are placed in a unique position in terms of their probability standing with regard to reception of positive, negative and neutral choices. A three-dimensional graph was earlier envisaged by Stuart Chapin ("A Three-Dimensional Model for Visual Analysis of Group Structures", *American Journal of Sociology,* Volume 56), while the utility of *graph theory* in sociometric research has been outlined, for the first time, by Horary and Norman ("Graph Theory as a Mathematical Model in Social Sciences", University of Michigan pamphlet, 1953).

Mentioned must be, of course, the *interaction diagrams*—graphs which are an incipient sociomatrix (already in Stegreiftheater, 1923), with subjects heading the rows and time-sequences the columns. These interaction diagrams have been used extensively especially in connection with observational laboratory research. Finally, the *locograms* or *positional diagrams* should be here recalled, as well as the *role diagrams* (Zerka Toeman, "How to Construct a Role Diagram", *Sociatry,* Volume 2, 1948-9; Moreno, Jacob L. in *Who Shall Survive?* 1953, p. 149, *Das Stegreiftheater,* 1923, p. 88—and other writings).

The *sociomatrix* has been, for some purposes, the most fruitful innovation. A modified version of the original interaction diagram, Moreno's, the sociomatrix has been extensively discussed by Dodd ("The Interrelation Matrix", SOCIOMETRY, Volume 3, February 1940; "Analysis of the Interrelation Matrix by Its Surface and Structure", SOCIOMETRY, Volume 3, May 1940; and "Sociomatrices and Levels of Interaction", SOCIOMETRY, Volume 14, May-August, 1951). Dodd has been envisaging multi-dimensional sociomatrices; Tanennbaum, Massarik, Wechsler have proposed a multi-dimensional sociomatrix with interaction patterns recorded on normative, perceived, actual, desired and rejection relationships of the subjects.

Moreno's first interaction diagrams were, indeed, incipient sociomatrices. The columns represented time sequences, whereas the rows were vectors of

behavior of the subjects in the respective time periods. The sociomatrix becomes a square matrix wherein the crossections of the row and column vectors indicate the presence, absence and kind of interpersonal relationship between the subject heading the row-vector and the subject at head of the column vector. The sociomatrix makes the evaluation of the number of choices given and choices received very simple: the marginal vectors are used for these purposes. While the sociogram, the target diagram, and even the trivariate scatter become tremendously complex for larger populations so that the difficulty of interpretation increases disproportionately with population size, the sociomatrix remains a simple construct regardless of group size.

N. Sociometric Indices

In elementary analysis of sociometric configurations, the researchers have developed a rather large number of index numbers. These simple ratios have been employed to evaluate the relative position of individuals within a population, the relative position of subgroups within a population, as well as the relative standing of groups.

Who Shall Survive? (1934) initiates the era of index analysis. Since the days of the Index of Positive Expansiveness and Negative Expansiveness, the Index of Choice Status and Rejection Status, numerous new ratios have been proposed and widely utilized. Loomis and Proctor (in Jahoda, Deutsch and Cook, *Research Methods in Social Relations,* 1951) give an excellent survey of Index numbers, preceded by the work of Urie Bronfenbrenner ("The Measurement of Sociometric Status, Structure and Development", *Monograph No.* 6 (1945). In the 1953 edition of *Who Shall Survive?* (p. 453-4), Moreno overviews the various index numbers. Nehnevajsa provides the German reader with an exhaustive survey ("Soziometrische Analyse von Gruppen", Part II, *Koelner Zeitschrift fuer Soziologie,* Volume 7, June 1955). A volume is being prepared for Italian sociometrists, with Moreno's works appearing in French and German translations during 1954.

A combined Choice-Rejection Status index is proposed by Zeleny ("Status, Its Measurement and Control in Education", Sociometry, Volume 4, May 1941)—as a ratio of choices minus the rejections over the total number of possible choices, further refined by the utilization of the average deviation. Helen Jennings (*Leadership and Isolation,* 1948) has offered her Choice-Rejection Patterns whereby individual index types emerge by referring the standing of each individual to the group mean on his Positive, Negative and Mutual income and output of choices, sixty-four patterns altogether.

The Ratio of Interest and the Ratio of Attraction applicable to group analysis are developed very early by Moreno and Jennings ("Statistics of Social Configurations", SOCIOMETRY, Volume 1, January-April 1938), with Lundberg and Steel working out the Index of Subgroup Cohesion in their research in the Vermont village (SOCIOMETRY, Volume 1, 1938). The Criswell Ratio—comparing the total number of choices expected by a given population subgroup to the actual number of choices received by a subgroup —emerges ("Sociometric Methods of Measuring Group Preferences", SOCIOMETRY, Volume 6, December 1943). Thanks to the same author, the Index of Group Coherence is developed ("Measurement of Reciprocation Under Multiple Criteria of Choice", SOCIOMETRY, Volume 9, May 1946). In 1947, Zeleny adds an Index of Ingroup Climate ("Selection of the Unprejudiced", SOCIOMETRY, Volume 10, November 1947), elaborated by Loomis and Proctor (in their above mentioned chapter in Jahoda, Deutsch and Cook) in terms of the six types of tele resulting from combinations of positive, neutral and negative portions of tele (projective and retrojective). A set of indeces used by Stogdill ("The Sociometry of Working Relations: 20 Sociometric Indeces", SOCIOMETRY, Volume 14, November 1951) is conceptually similar to the idea of Choice-Rejection Patterns of Jennings (to use a number of ratios for the description of an individual's standing) as well as to the idea of *sociodiagnostic prophiles* whereby a unique graph-line in terms of a preannounced group of index-numbers depicts the standing of a given individual.

A contribution of considerable importance is made by Massarik-Tanennbaum and Wechsler ("Sociometric Choice and Organizational Effectiveness: A Multi-Relational Approach", SOCIOMETRY, Volume 16, 1953); these multi-relational indeces as composite ratios utilizing data on normative, perceived, actual, positive and negative relationships are applicable to both individuals and groups. Bock and Husain ("An Adaptation of Holzinger's B-Coefficient for the Analysis of Sociometric Data", SOCIOMETRY, Volume 13, May 1950) devise a method for the analysis of cliques within a population, an index procedure whereby the researcher can ascertain exactly who does and who does not belong into a given clique. Several innovations come from Paul Maucorps ("Sociometric Inquiry in the French Army", SOCIOMETRY, Volume 12, February-August 1949), while Leo Katz elaborates his Reciprocity Index and a new Status Index in two unpublished research documents ("The Reciprocity Index", Research Memorandum, Michigan State College, 1952; "A New Status Index Derived from Sociometric Analysis", Research Memorandum, Michigan State College, 1952). The Status Index of Katz

is theoretically quite interesting, yet, leaves empirically much to be desired. For the first time, however, a sociometric index-number includes not only immediate inter-personal choices but an attempt is made to include the whole *vector* of choices (including contingent ones, that is, involving the notion of the importance of being chosen *through* one, two, . . x, other individuals).

Good discussions of the rationale behind index-numbers are to be found in Lundberg (*Social Research,* 1942) and in the above-mentioned article by Criswell (1949). It is however Paul Lazarsfeld who has delt imaginatively with two major issues in index-analysis: the problem of ambiguity of indeces and the problem of differential sensitivity of indeces. ("Some Notes on the Use of Indeces in Social Research", undated mimeographed document of Columbia University). Lazarsfeld not only explains how it is possible that two index-numbers designed to measure the same phenomenon (say group integration) may yield contradictory answers: the seeming contradiction is explainable in terms of an Area of Ambiguity of the performance-lines of such indexes; the author suggests also techniques for determining which index, in such a case, is operationally the more efficient one.

O. Matrix Algebra in Sociometry

The idea that, since sociometric data can be tabulated onto a sociomatrix, matrix algebra, in some of its respects, is analytically useful has been tremendously fruitful. Luce and Perry ("A Method of Matrix Analysis of Group Structures", *Psychometrika,* Volume 14, 1949) develop the basic reasoning of multiplaction of sociomatrices; their technique is employed by Festinger-Schachter and Back in an actual field study ("Social Pressures in Informal Groups", Harper and Brothers, 1950), to be followed by the stimulating discussion of connectivity of sociomatrices by Luce "Connectivity and Generalized Cliques in Sociometric Group Structure", *Psychometrika,* Volume 15, 1950).

The discovery is rather simple: the n-th power of a sociomatrix yields information on n-chains—relationships of one individual with another one through n-1 others. The use of mutual relationships only, that is of the symmetric sociomatrix, will disclose the existence, and size, of cliques non-ambiguously. In many respects, the work of Leo Katz has been pioneering along these lines ("On the Matrix Analysis of Sociometric Data", Sociometry, Volume 10, August 1947; and "Relation of Satisfaction to Reduction of the Choice-Matrix", Research Memorandum, Michigan State College, 1952). Another mimeographed document on the subject comes from Horary and Ross (University of Michigan).

Matrix analysis seems especially useful in any studies of news, rumor, and influence spreading—as it may be meaningfully argued that the position of an individual in his group is not only a function of his direct relationship with others but also of his interrelatedness with others through chains, or k-chains, where k is the number of links in such a configuration. In their joint article, Dodd and Winthrop ("A Dimensional Theory of Social Diffusion", SOCIOMETRY, Volume 16, 1953) point out the need for n-dimensional matrix algebra as a possible new area of analytic exploration.

P. PROBABILISTIC ANALYSIS

Paul Lazarsfeld's solution of the mathematical problem presented to him by Moreno and Jennings ("Statistics of Social Configurations", SOCIOMETRY, Volume 1, January-March 1938)—the formulation of the probability of any given individual being chosen by any other specific individual —stands at the roots of probabilistic analysis in the field. The Bernoulli series is used by Moreno and Jennings for a group of 26 with three choices permitted to each individual to evaluate the expectation of choice-income, that is the probability of an individual being chosen 0,1,2 . . . N-1 times. Urie Bronfenbrenner follows with his stimulating articles ("Constant Frame of Reference for Sociometric Research", Part I: SOCIOMETRY, Volume 6, December 1943; Part II: SOCIOMETRY, Volume 7, February 1944). The author evaluates the expectancy of mutual choices—and suggests their expected distribution; expectancies of unreciprocated choices are studied. But foremost, Bronfenbrenner employs shortcut methods to approximate the computationally tedious binomial: the Poisson distribution, the Incomplete Beta Function (tabulated by Pearson, 1934), the Gram-Charlier Series, and the Pearson Type III Function (Tabulated by Salvosa (1930). In their rejoinders, Joan Criswell ("Notes on the Constant Frame of Reference Problem", SOCIOMETRY, Volume 13, May 1950) and Daisy Edwards ("The Constant Frame of Reference Problem in Sociometry", SOCIOMETRY, Volume 11, December 1948) discusses the contributions of Bronfenbrenner; Edwards specifically points out the incorrect solution of the problem of distribution of mutual choices due to the fact that mutualities in sociometric configurations are not statistically independent of each other. As late as 1952, Leo Katz argues the same point ("Recent Advances and Some Unsolved Problems of Sociometric Theory", Research Memorandum, Michigan State College, 1952) to conclude that the issue of mutual choices has yet to be successfully solved by sociometrists.

Leo Katz solves the problem of the distribution of isolated individuals

("The Distribution of Isolates in a Social Group", *Annals of Mathematical Statistics,* Volume 23, 1952), and the problem of expectancy of various k-chains (in the Research Memorandum mentioned above). His work was anticipated by Schutzenberger ("Etudes Statistique d'un probleme du sociometrie", *Acta Gallica Biologica,* Paris, 1948) and Maucorps ("Sociometric Inquiry into the French Army", SOCIOMETRY, Volume 12, February 1949).

Daisy Edwards proposes procedures for evaluating the expectancy of inter-class choice distribution, a technique operationally described later by Nehnevajsa ("Chance Expectancy and Intergroup Choice", SOCIOMETRY, Volume 18, May 1955).

Finally, the work of Kephart ("A Quantitative Analysis of Intragroup Relationships", *American Journal of Sociology,* Volume 56, 1950) should be mentioned. The author analyzes mathematically the group structure as a whole, providing clues as to how many various interrelational forms may exist within a group of a given size.

Q. General Statistics

Let finally a few remarks be made about the use of general statistical procedures. Our previous discussions dealt with analytic procedures specifically designed for the study of sociometric configurations. When additional variables are involved, sociometrists have employed general statistical methods. All forms of correlation coefficients have found their way into sociometry—as one may expect. Factor analysis has been utilized (Bock and Husain, "Factors of the Tele: A Preliminary Report", SOCIOMETRY, Volume 15, August-December, 1952); Riley ("Scales Applied to Dyadic Relationships", SOCIOMETRY, Volume 15, February-May 1952) and Uriel Foa ("Scale and Intensity Analysis in Sociometric Research", SOCIOMETRY, Volume 13, December 1950) explore scalograms in sociometric research, primarily leaning on techniques developed by Guttman ("American Soldier", Volume 4).

R. Sociometric Patterns and Personality Traits

The studies relating the tele-configurations to various measures of personality characteristics are far too numerous to deal with exhaustively. But a few more important examples may be usefully mentioned. Basic in these researches are studies of Moreno's group on "cleavages" on the basis of age, sex and race, with a great number of projects following suit. Moreno has reported many findings in both editions of *Who Shall Survive?* (1934 and 1953). Criswell, Loomis, Lundberg and Dickson have studied racial

cleavages rather extensively. Reva Potashin studied the relationship between sociometric patterns and mental age; the same author, as well as Bonney, Wakely, Wherry and Fryer (in studies which we have previously referred to) relate intelligence (I.Q.) to tele relationships; Cassell and Saugstadt ("Level of Aspiration and Sociometric Distance", SOCIOMETRY, Volume 15, August-November, 1952) employed personality rating scales, French and Mensh ("Some Relationships Between Interpersonal Judgements and Sociometric Status in a College Group", SOCIOMETRY, Volume 11, November 1948) and Maucorps use personality self-ratings. Northway and Widgor ("Rorschach Patterns Related to the Sociometric Status of School Children", SOCIOMETRY, Volume 10, May 1947) and Esther Frankel in an unpublished M.A. thesis (University of Chicago, 1948) investigate sociometric patterns in terms of Rorschach inkblots, Borgatta utilizes picture frustration tests, Radke and Sutherland the projective picture tests. ("Racial Attitudes of Children", SOCIOMETRY, Volume 13, May 1950).

S. SOCIOMETRIC PATTERNS AND SOCIO-CULTURAL VARIABLES

Residential proximity was hypothesized conducive to the formation of friendship configurations by Potashin, Lundberg, Beazly and Dickson as well as by Willerman and Swanson ("An Ecologocial Determinant of Differential Amounts of Sociometric Choices within College Sororities", SOCIOMETRY, Volume 15, August-November, 1952). Bonney, Wherry and Fryer and Potashin related academic achievement to sociometric patterns, Longmore investigated differential income levels in a Peruvian communities ("A Matrix Approach to the Analysis of Rank and Status in a Community in Peru", SOCIOMETRY, Volume 11, August 1948). Bonney employed the Dreesy and Mooney Interest Inventory, Lundberg, Beazley and Dickson similarly studied interests of subjects. Seeman ("A Situational Approach to Intragroup Negro Attitudes", SOCIOMETRY, Volume 9, May-August, 1946), Wardlow and Greene ("An Exploratory Sociometric Study of Peer Status Among Adolescent Girls", SOCIOMETRY, Volume 15, August-November, 1952) administered the Ohio Social Acceptance Scale with the latter authors adding the Ohio Social Recognition test. Family background of respondents was related to sociometric configurations in the Vermont study of Lundberg and Steele, in works of Northway, Loomis and Powell. Socio-economic status was measured by Ludberg (Chapin's scale); Wardlow and Greene investigated status and sociometric patterns.

T. Sociometric Patterns and Behavior

The whole issue of *validity* of sociometric data, previously briefly outlined by Pepinsky ("The Meaning of Validity and Reliability as Applied to Sociometric Tests", *Educational Psychology Measurement,* Volume 9, 1949) has been studied recently in an all-out attack by Mouton, Blake and Fruchter ("The Validity of Sociometric Responses", Sociometry, Volume 18, August 1955), preceded by a 1951 account by Eugene Byrd ("A Study of Validity and Constancy of Choices in a Sociometric Test", Sociometry, Volume 14, May-August, 1951). An experiment has been reported by Edgar Borgatta ("An Analysis of Three Levels of Response: An Approach to Some Relationships Among Dimensions of Personality", Sociometry, Volume 14, November 1950); which tries to define a conceptual distance between *actual behavior, role-playing, verbal response behavior* and *written response behavior.*

Robert French ("Sociometric Measures in Relation to Individual Adjustment and Group Performance Among Naval Recruits", *American Psychologist,* 1949), D. M. Goodacre ("The Use of a Sociometric Test as a Predictor of Combat Unit Effectiveness", Sociometry, Volume 14, May-August 1951), Gough ("Predicting Social Participation", *Journal of Social Psychology,* Volume 35, 1952), Grosser, Polansky and Lippitt ("A Laboratory Study of Behavioral Contagion", *Human Relations,* Volume 1, 1951), Hemphill ("Relations Between the Size of the Group and Behavior of Superior Leaders", *Journal of Social Psychology,* Volume 46, 1951), Nahum Medalia (in his military studies)—all study various aspects of behavior of subjects. Through observational techniques, data is obtained on respondent actions in addition to sociometric testing by Lundberg and Beazley, Potashin, Yablonsky, Gregory, and frequently, by Northway. The Hudson studies, and many subsequent projects of Moreno and Jennings include sociometric measures as well as data on behavior usually assembled by observation.

U. Sociometric Vistas

The growth of sociometry up-to-date is the key to its future development. Sociometric theory, therapeutic methods, research methodology as well as substantive research—all may well be entering a new era. For in spite, and perhaps because, of the numerous achievements, much remains to be done.

Sociometric theory is, at this stage, considerably developed. It provides its student with a systematic analysis of interpersonal relations assuming a social and organic unity of mankind (Moreno, *Who Shall Survive?* 1953).

Yet, much careful work must go into relating the theory to the available body of knowledge gathered, in the course of the past three decades, by sociologists and social psychologists. A clearcut presentation, other than hypothetical, of the relationship of sociometric theories to the theories of social roles, for example, or to institutional sociology is still lacking to a large extent. Cross-cultural research in sociometry will help prove, and/or modify, some of the present propositions. The sociometric perspectives of major social processes, such as cooperation, competition, accommodation, conflict, assimilation—while envisaged with lucidity by Moreno and others—are likely to attract the attention of sociometrists.

The further growth of therapy, not unlike that of theory, revolves not only around extended interest in group psychotherapy, the inclusion of the technique in many new practical programs within Universities, in the industry, in Government and in the Armed Forces—in America and abroad, but also around the constant search for new methods. The accumulation of data on results of sociometric therapy will provide the psychodrama director, the sociometrist-therapist with more norms of conduct. Thus on one hand, differences from director to director in analysis may gradually be minimized, while on the other hand, the poetic spontaneity of ad lib productions may yield some way to more formal approaches. A strength, or a weakness—who can tell with definiteness?

Methodological problems center around a few unsolved problems. The main one deals with the probabilistic distribution of mutual choices in a group. The other issues cluster around the analytical imaginativeness of future sociometrists: how far can matrix algebra be exploited for uses by sociometrists? how will the application of scale analysis aid in the study of sociometric patterns? how can probabilistic procedures be modified by the inclusion of additional parameters so that the probability statistics of sociometry may lead to the formation of mathematical models? and, importantly enough, is this a fruitful line of attack at all?

Finally, of potential significance to sociometry are considerations about sampling. Touched upon by Bassett ("Sampling Problems in Influence Studies", SOCIOMETRY, Volume 11, November 1948) and Darrell Bock ("Time Sampling and Sociometric Testing", SOCIOMETRY, Volume 15, August-November, 1952), the issue of sampling *interpersonal relations*—dyadic and larger-sized—remains completely unsolved. With it, the possibility of large-scale generalizations in sociometric research may well stand or fall.

The prospects for substantive research are both bright and gloomy. First of all, an unlimited range of problems exists which having been explored,

necessitate retesting and re-retesting. Secondly, many questions have been hardly touched upon by the researcher, specifically the whole set of hypotheses pertaining to the dynamic relationship of sociometric variables and the normative social patterns. Issues of social cohesion, integration, and cleavage await yet a reformulation on some basis which may clarify the presently obscure meaning of the concepts. Hardly any studies have been designed to inquire into possible predictivity of sociometric configurations at some future date provided that data exists on the configurations here-and-now. Nor have the thousands of case-studies of various populations been adequately related to each other—so that predictivity from one population to another is still wanted.

The vistas are gloomy in one sense only: far too many studies are being conducted with little or no coordination between them so that a frontal attack may be launched on some of the burning issues. This, in part, due to the not-too-outstanding communications among contemporary scientists. In part, due to the bias of many scholars for "studiable" and readily accessible populations, projects designed not due to the intrinsic importance of the problem but inadvertently "because a population is available". One aims to fit research problems to available populations rather than locate populations to fit research problems—although many notable exceptions exist. The result: thousands of studies among college and high-school students, with the concluding sentence usually worded somewhat as follows: "The findings are tentative; the need for further research is strongly indicated." But this is not a problem unique to research sociometry.

V. The Sociometrists

We said at the outset that the story of sociometry was one of men, their ideas and activities. In the previous sections of this discussion, we viewed sociometry in terms of several classificatory categories. Thus amidst our remarks, the contributions of a number of sociometrists may have seemed lost scattered over the whole range of their activities. Perhaps this is the right time and place to look at some of these scientists more individually.

While most of the theoretical discussions have come from but a few writers, Moreno, Helen Jennings, Paul Deutschberger, Zerka Toeman, sociometry has benefited greatly by evaluative arguments pertaining to the whole field by a number of outstanding contemporary scientists. We have had an occasion to mention the work of Margaret Mead, Georges Gurvitch and Florian Znaniecki in this context; several such articles have been published by Stuart Chapin ("Trends in Sociometry and Critique", Sociometry, Vol-

ume 3, August 1940; "Relation of Sociometry to Planning in an Expanding Social Universe", SOCIOMETRY, Volume 6, August 1940), Read Bain, George Lundberg (in his *Social Research*), Gardner Murphy (SOCIOMETRY, Volume VI, 1943, pp. 221-2), Gordon W. Allport (*Group Psychotherapy*, Volume VII, 1954, pp. 307-8) and Pitirim Sorokin. In German literature, we find contributions to general sociometry by Leopold von Wiese (also in "Sociometry", SOCIOMETRY, Volume 12, January-August, 1949) and Theodor Geiger ("Ueber Soziometrik und ihre Grenzen", *Koelner Zeitschrift fuer Soziologie"*, Volume 1, 1948-49). In many respects, the writings of Leslie Zeleny, Merl Bonney, Joan Criswell and Mary Northway have had a direct bearing on the advancement of sociometric theories; Paul Lazarsfeld, one of the early protagonists of sociometric measurement has concerned himself with the affective dimensions of likes, dislikes and indifferences ("Some Properties of the Trichotomy 'Like, No-opinion, Dislike' and Their Psychological Interpretation", SOCIOMETRY, Volume 3, May 1940).

The range of contributions of these scholars varies indeed. Von Wiese and Geiger have been primarily motivated by theoretical interests. Georges Gurvitch has been instrumental in stimulating French social scientists toward an appetite for sociometric research; Zeleny, Bonney, Griswell and Northway have been researchers as well as, implicitly, theorists. In various ways, all four have added to the body of analytical techniques: Zeleny with his sociometric status index, Bonney with his approach to affective-intensity measures, Criswell with her ratio of choices expected by an ingroup as well as in probabilistic analysis, Northway with her target diagrams as well as with her newer cumulative sociometric charts ("A Plan For Sociometric Studies in a Longitudinal Programme of Research in Child Development", SOCIOMETRY, Volume 17, August 1954).

George Lundberg, a philosopher of science in some regards, has been at the same time an innovator in the area of index analysis, as well as in pioneering in new substantive research: whether Wollman or Lundberg were the first ones to study whole communities (preceded by Moreno's Mittendorf studies) seems less important than the fact that both have distinctly added to sociometric work: Wollman in applied sociometry, Lundberg in research sociometry. Nor do we find anywhere but in Northway and her associates such systematic preoccupation with sociometry among children, and in Bonney, systematic attacks on sociometry among adolescents.

As Lundberg and Wollman have pioneered in sociometric community studies, Maucorps, Goodacre, Stogdill, Medalia and Miller have introduced the field in systematic research in the armed forces, while Jacobs ("Applica-

tion of Sociometry to Industry", SOCIOMETRY, Volume 8, May 1945), James, Maucorps, Massarik, Tannenbaum, Kahane and Wechsler have done the same for the industry. Along these lines, the unpublished contributions of Daniel Katz with Maccoby and Gurin in the area of morale among workers must be at least mentioned.

Nor would it do to omit the numerous works of Loomis, Proctor and Davidson—both pertaining to status relationships in communities as well as to ethnic cleavages with the interests of Henrik Infield concentrated in a similar research area.

Several researchers have been preoccupied with attempts to provide sociometry with a powerful body of analytical techniques. We may think here of the extensive contributions of Leo Katz, Stuart Dodd, Leon Festinger, Urie Bronfenbrenner as well as others such as Ross, Olkin, Horary, Edwards. Some of the exciting newer suggestions have yet to be explored: those related to scale analysis (Uriel Foa, Matilda Riley), and to the uses of symbolic logic (Ake Bjerstedt, "Some Examples of the Possibility of Using Structural Formalizations in Sociometric Analysis", SOCIOMETRY, Volume 16, November 1953).

A new methodological attack upon some crucial sociometric problems has been made by Thrall and Angell under a research contract of the Office of Naval Research. The authors have combined probabilistic considerations with matrix algebra and symbolic logic to arrive at a set of measures whereby community organizations may be analyzed, specifically from the viewpoint of social stratification. ("The Mapping of Community Organizations", Volume 17, SOCIOMETRY, August 1954).

A few cursory observations seem to reveal that the study of psychosocial networks among sociometrists would be of some importance: how has creativity been related to the positions of respective scientists in this network? How does this network cut across the configurations among behavioral scientists in general? The sociometrists, as a group of interrelated individuals, have helped their field grow—and grow out of all proportions and beyond all expectations. Though somewhat indirectly, many other scientists have been instrumental to this growth—perhaps, by their mere support and friendship. In this regard, the contributions of men like Gardner Murphy, Theodore Newcomb, Ernest Burgess, George Murdock, Paul Lazarsfeld may have been tangential to the field; but it is hard to say that without their interest sociometry would have fared as well as it has. Nor have men like Georges Gurvitch and Roger Bastide in France, Leopold von Wiese and Rene Koenig in Germany, Corrado Gini in Italy, done themselves

sociometric research or acted as therapists: yet, their "presence" in the sociometric network of sociometrists has, indeed, been vividly felt.

W. Major Trends in Sociometry

We have already argued that sociometry, up to about 1935 or 1936, is a blend of theory, research and therapy. As a theory, it is a challenge to the psychoanalytic theorizing of Freud and the Freudians; as a research technique, it provides suggestive methods of measurement of phenomena otherwise difficult (if not impossible) to measure; as a therapeutic instrument it falls in line with the democratic ideology on one hand, and, on the other hand, it leads to the growth of therapy which revolves around the social reality of the individual patient as well as around his inner self. As a theory, sociometry has revised the notions of Toennies and Cooley on primary groups by demonstrating theoretically *and* empirically that sociometric networks are different from, and supplementary to, face-to-face configurations of the "Gemeinschaft" and the "primary" type. As a research technique, it has been experimental but also survey-centered: both the laboratory *and* the field have played an immense role in sociometric work. As a method of therapy, it has unleashed individual behavior toward all-inclusive catharsis by capitalizing on his verbal, as well as muscular behavior—not forgetting the crucial influence of the physical-object environment around the subject (when on the psychodrama stage the subject "reconstructs" conceptually the *locus* of a situation and not only the situation itself), and of alters.

Theorizing about small groups as well as studies of processes by the assessment of the verbal interaction has separated out the field of group dynamics from the larger field of Sociometry. Its origins date back to the late 'thirties—at least, as we know group dynamics today. Scholarly arguments, as well as tele-relations among various scientists have tended to increase the seeming gap between sociometry and group dynamics. But both developmental tracks have, simultaneously, helped bridge the gap between psychology and sociology giving rise to the increased emphasis on, and interest in, social psychology. Social psychology borrowed from sociometry the analytic framework of reciprocity of relationships, approaching closer and closer the study of *groups*.

Mathematical sociometry originated in the womb of the field as soon as it became obvious that substantive knowledge will be improved when rigorous analytic procedures are developed. Today, sociometry is equipped with many powerful tools—sometimes even unaware of all their potentialities and ramifications since many scholars who have not been particularly mathematically

minded, have found it difficult to keep up with the development of sociometric statistics.

Substantively, sociometry has been primarily devoted to the uncovering of relationships: what variables are, and are not, related to homogeneity of sociometric choice? how are homogeneous variables related to sociometric choice? That is, do people of similar intelligence, sex, race, residence, socio-economic status form specific sociometric patterns (such as mutualities)? And, do people of similar sociometric patterns belong to groups homogeneous in terms of intelligence, sex, race, residence, socio-economic status and such?

Thus, several lines of attack upon phenomena in question have been opened in the past fifteen years or so. The promise lies in the integration of all these trends, in a synthesis of the theories, methods and findings. The time seems ripe for such an integration.

What is it that we know today? The numerous case-studies show undoubtedly that sociometric patterns are real—as much as the "atom" of the physicist is real. They show that discrepancies between the affective structures and the formal systems are similarly real, and that, consequently, many social problems can be brought closer to a solution if the discrepancy could be removed. Without sociometric considerations, studies in social stratification, communication, and social institutions become somewhat lifeless; problems of morale, cohesion, integration, leadership, isolation are, indeed, proper sociometric issues, but they are also questions in role—relationships. We know also, from many studies, that an "individual"—an abstraction anyway—moves through his life in, and with, a cluster of changing relationships around him. We guess that the moves toward equilibration, that is toward maximizing his adjustment in the world around him—toward sociostasis. Sociometry, medical sociology, the studies of social problems find their convergence herein.

It is not exaggerated to say that, around sociometry, contemporary sociology and social psychology have widened their scope and enriched their methods—to foreshadow the rise of a *behavioral science,* or a science of man.

X. Ask A Question

Ask a question, today, of a social scientist: What are your major interests in the field? More often than not, the answer will be: I am interested in small groups.

Let a few notes be made about this. Small group research is, indeed, the fad of the day. In America, the climax is approaching rapidly; in many other countries, the interest is but awakening. Is it then a "fad" which,

having had its day, shall have disappeared to be replaced by some new fashion? We doubt this strongly.

It is true, that in some cases, small group research is a byproduct of simple considerations: one is expected to do research; one is expected to publish its results; hence, by the principle of least effort, one does that which *appears* "easiest" to do. A small group can readily be assembled. Budgets for small group research *generally* tend to be relatively low. A design can be worked out with relative facility.

But it is equally correct to say that there is much more to the current interest in small groups than this; fortunately, there is much more to it. The researchers have come to realize that small groups perform two major functions in contemporary scientific endeavors: on one hand, they are miniature societies where, weaker though they may be reproduced, social phenomena can be structured with considerable accuracy. The laboratory which has led to so many advances in the natural sciences is becoming common in behavioral research because it is susceptible of controls. On the other hand, small groups are not mere miniatures of larger social fabrics: they are themselves configurations which "really" exist in our societies and which "really" matter. Relationships among members of a particular governing elite might well be more important to provide clues to international problems than the classical formalized diplomatic relationships. Decision-making behavior, in Government, in the military, in industry—wherever we look, occurs in small groups whose pattern is a likely fundamental codeterminant of the outcome of any deliberation. "Powers behind the throne" are merely sociometric "powers"—channels of influence an individual may wield upon a group although he need not be a "formal leader". In fact, we shall assert that small groups are the *basic real referents* for each individual, with "societies", "cultures", "symbols" being referred to only through small groups.

Small group research was not started by Moreno but it cannot be denied that he and the sociometrists were the first to *recognize* its great importance and that they began to develop the field systematically with greater energy than anyone else before them.

"The organization of the Viennese Stegreif laboratory in 1923 (and its many successors in the USA) was one force, Gardner Murphy's "Experimental Social Psychology" (1931) and his fatherly, all embracing support and understanding of all the ego- and production-involved talents throughout the decade of 1930 was a second force; this was followed by the appearance of *Who Shall Survive?* (1934). But the high point of crystallization for all concerned was probably the foundation of Sociometry, *A Journal of Inter-*

personal Relations (1937; first published as *Sociometric Review* in 1936), with Gardner Murphy as its first editor. This journal was of crucial importance for the spread of small group research. Between 1936 and 1941 it published seventy-five articles (about 65% of the printed production during that period) dealing with sociometric and near-sociometric small group research. Among the participants in this early production were most of the promising talents in this area, in alphabetic order: S. Chapin, L. Cottrell, S. Dodd, M. Hagen, E. Hartley, H. Infield, H. Jennings, J. Kephart, P. Lazarsfeld, K. Lewin, R. Lippitt, C. Loomis, G. Lundberg, J. L. Moreno, T. Newcomb, M. Northway, I. Sanders, M. Sherif, L. Zeleny. They became, in small group research, the chain leaders of the growing flood of productivity between 1941 and 1953." ("Old and New Trends in Sociometry: Turning Points in Small Group Research", SOCIOMETRY, Volume XVII, 1954, p. 186.)

In a similar vein, our societies tell us (or we construe they do) which values are to be cherished and which goals need be achieved. We are told, implicitly, that adjustment is to be preferred to maladjustment. We are told that sanity is to be preferred to personality disorders and mental disease. We are told that social problems need be solved. For the successful discharge of all these tasks, and tasks related to them, our societies look to the social scientists. If we know that functioning in small groups is vital to an individual—to all individuals in such groups—it follows that it is equally vital to malfunctioning. Group therapy does not deal with questions like: "Are these goals desirable?" But it assumes that the goals are desirable, if our society labels them as such, and it aims at their achievement.

One may philosophize that maladjustment is more conducive to imaginativeness than adjustment. One may argue that an adjusted society would be a sterile society. Or, one may say that a maladjusted individual wastes much of his creative energy in hopeless efforts to adjust and, were he to be adjusted, his creativity would become free to flow. The researcher may attempt to answer these, and similar, questions. The applier, however, accepts the paramount social values as given.

No matter how we view our problem, small group research is, indeed, a fad. But beyond and above that, it is a lasting must in the behavioral sciences. Small groups are real or they can be made to stand for something which is real.

Sociometry has thus been not only a field of study in its own right. Not only has it directly enriched our modern research methodology and pushed some of the barriers of the unknown. It has, at the same time, been the fertile soil for many related activities—it has permeated all of contem-

porary behavioral research to some extent. In its youth of thirty some years, sociometry has done more than well, indeed. Yet, its growth has but begun.

AMERICAN CULTURE-IN-TRANSITION

J. L. MORENO

I

There are hundreds of thousands of research workers in the USA, each spinning his own yarn, but each at the same time unwittingly working on the canvas of the expanding American culture. Certain trends can already be clearly seen.

(1) The development of sociometry in the USA is not an accident. More than any other living variety of human species, the American man loves to express status and achievements in figures; he is the "homo metrum". Proof for this claim can not only be found in the trend to express all values in dollars and cents, but in the fact that typical collective efforts of the American intellect converge in this view. Pragmatism and sociometry, for instance, developed in historical sequence, one preparing the way for the other. Pragmatism is more nearly than any other view of life its native philosophical brand, and sociometry, taken in its broadest sense, is becoming growingly its native social science. Pragmatism and sociometry are closely related, they combine the perceivable with the measurable. It is significant that the late John Dewey, soon after the appearance of *Who Shall Survive?* wrote a letter in 1934 in which he said: "This seems to be the next step and the technique is already quite developed."

(2) American people are traditionally linked to the word "democracy". Democracy means government by the people; demos is the Greek word for people, krateo, for government. It has come to mean a kind of society which is so organized that an equal opportunity to live and to earn is open to all its citizens. The drive towards a democratically oriented society is linked in our memory with the ancient Greeks. They were among the first to permit their citizens a form of electoral representation and to start the cycle of political democracies. When democracy failed, it did not die out entirely, but found a successor in the "love your neighbor" pattern of the Christian doctrine of the early centuries. Capitalistic democracy, born of technology was the next to emerge from the ashes of the French Revolution and to be ap-

plied in France and the United States of America. The communistic democracy of Soviet Russia developed since the Russian Revolution of 1917 and other communistic societies followed the Russian pattern in recent years. But each of these political, religious and economic systems of government has failed to produce a universally acceptable format of democratic government. They all seem to contain some part of the truth but no one knows for sure which one. They have failed because they have no other final authority upon which to build their claims than the authority to be right, and every other authority opposing theirs, to be wrong. Since the era of revolutions spread over the whole planet, the need for a neutral, genuine authority has become the greatest need of mankind. Indeed, it is in this lack of a universal format, of an indisputable authority that the cause of all current restlessness must be found. The only truly new authority which has emerged and which increasingly commands the respect of all the people in all parts of the world is "science". In itself it is entirely powerless and has no other basis for respectability than that it represents truth. But science tells us only what "is", it does not tell us what to do. In the form of the physical and technical sciences it has succeeded not only to gain universal acceptance, but to conquer the world. A science of democratic behavior, gradually emerging, may be able to create the foundations of a type of democracy which has never existed before, a scientific democracy. It may be able to bring to a synthesis all the forms of democracy of the past. But is such a "science of democracy" attainable? Democracy, in order to become not only a political but a social reality, needs scientific foundations. It is in this profound need that the link between democracy and sociometry rests.

(3) One of the first principles which Americans proclaim is: "We Americans are governed by law, not by men." This conveys the meaning of extreme individualism, a spirit of independence, unwillingness to surrender to ideas of others. The implication is that governments by men, and any organizations ruled by self-willed individuals are detested, they resemble dictatorships; that people are elsewhere coerced into subordination, whereas here everyone is within certain limits his own government, free to think independently and to develop his own view of the world, unimpeded by external authority. This is presented in contrast to ways of life in other parts of the world. Here "the President is elected", there "the King is born". Here everyone can become President, we have one hundred and fifty million potential Presidents. There the throne is transferred from father to son, it is inherited, there is only one successor to the King. The idea of being governed by law and not by men is a powerfully ingrained value system, the

supreme value system of the American way of life, with consequences reaching every overt manifestation. Its pressure towards conformism is so great that it tends to level off the group in order to preserve the constancy of its structure. The more eccentric individual is easily the victim. It often encourages the expressive drive of the untalented and the isolation of unusual individuals, to the extent that it becomes sociometrically harmful. A democracy can just as easily turn into the rule of mediocre men, a "mediocracy", as into the rule of creative men, a "creatocracy", although this appears to be in itself paradoxical. The preference of a government by law to a government by men is probably at the root of "the tendency to *separate* the idea or the method from its inventor" and so to destroy and humiliate the creator's spirit. It is noble to make the methods anonymous and universal but it is ignoble if this is done by coercion and manipulation. The result is that in all departments of cultural relations increasingly the *subleaders* rule instead of the leaders. The American tragedy is not the "lonely crowd", it is the "lonely genius".

II

Given these three dynamic characteristics of national behavior, how do we fare in producing an American culture? A hypothesis which is frequently expressed by observers is that *America of today is the center of the largest volume of high productivity and creativity, but the final form is finished and integrated elsewhere in the world. The United States of America are destined to remain "incomplete" as a culture.* (Hypothesis I)

Whenever foreigners come to us, they expect to find well established, coherent schools of thought. It may well be that they, as outsiders and distant observers have a better perception of the total Gestalt of what we have been attempting to do in the social sciences and human relations than we ourselves, who are so close to the process that we do not see the forest for the trees. We are diffused by many cliques and subtle disagreements; we see the persons involved and what separates them and do not see as clearly the forces which hold them together. But they are shocked to discover that notwithstanding the enormous volume of work and effort, they meet isolated individuals and scattered groups held together by transitory agreements, instead of by a spirit of Gemeinschaft and mutual loyalty. It may well be that our national character is so structured that we are not particularly prone to develop and maintain scientific schools and schools of art, following the style of the old world. The nation is full of original ideas in all branches of science and art, but it does not appear to be equally talented in organizing

and settling down with them. There is of course, one important exception, technology and engineering, in which Americans have been masters in developing and finishing ideas; perhaps because they are pragmatic "short-cuts" and models of precision and regularity. The danger is, as it is with some types of individual creators who are ever ready to start something new but never finish what they started, that someone comes and takes it away from them. Maybe also we as a nation start so many good things that we are destined to conceive and carry on, but not to deliver. The League of Nations, the United Nations Organization, the Marshall Plan, the sponsoring of scientific and social institutions everywhere on the globe are symbols of decentralization. It is a "give away culture".

When compared with other cultures—the Greek, the Roman, the French, the German, the Russian, the Chinese, the Hindu—which are easily identified by a large number of schools of thought and art—the Platonic School, the Aristotelian School, the Socratic School, among the Greeks; among the Germans the Marxists, the Hegelians, the Phaemenologists, the Positivists, the Expressionists, etc.—we, in contrast, have little to show. We invest great amounts of creative energy in organization but we do not permit schools of philosophy, art and science to crystallize. Take our most distinguished philosophical movements, like pragmatism and behaviorism—they have remained uneven and unformed; this cannot be ascribed to lack of genius. The genius of Charles Saunders Peirce and William James was easily as great as that of a Leibnitz or a Wundt, but there was something in the group surrounding them which did not encourage the formation of strong cooperative teams, the completing of tasks, the finishing of efforts, the settling down of an idea until it is ripe and the carrying over of a philosophy from one generation to the next. We organize "corporations" and "foundations", but there is enormous *resistance* against the crystallization of schools of thought in their creative aspect. The causes for this resistance are numerous. One cause of this defect is the relationship to the scientific or artistic "leader". On one hand, we are over-generous and encourage the development of leadership; on the other hand, the very democratic process produces drawbacks. It is natural that in a democracy the number of individuals who are free to express their leadership should be far larger than in an authoritarian regime. An eventual surplus of this increases competition and warfare to an extent that it hinders stability and orderly production.

But to this process an entirely different interpretation can be given if we accept the dictum that mankind is undergoing a process of change without any precedent in recorded history and requiring for balanced adaptation to

new external conditions a high degree of spontaneity and creativity. All national and regional cultures are in a process of unfreezing and in flux. In this crisis, the USA, the richest and technically the most advanced country, but also the country without a long tradition, may have a special destiny. *The United States does not put all its energy into the creation of a national culture because it is the social laboratory where the patterns of a culture of the entire world is being developed.* (Hypothesis II)

The goal of developing a culture of its own is secondary to being the producer for a new world to come. It is then understandable why the USA has an increased receptivity for ideas coming from other shores, why they are developed here short of standardized completion and then returned. In such a culture-in-transition the process of law is a safer anchorage than men. It is, at least formally, an objective, equitable frame of reference. The basic social and cultural institutions are neither maintained at all cost nor abolished, like in Soviet Russia, but undergo a significant process of restructuring, developing increasing flexibility to meet the demands of the crisis. The new type of institutions coming out do not freeze around an *individual* but a *group* of forces. In the old family the central figure was the father, the pater familias; the new American family resembles more nearly a cooperative enterprise in which husband, wife and children have equal rights. The development of the religious institutions also are assuming a more democratic character, man is becoming a partner of God. The idea of an ever-rising niveau of living for all Americans without exception enables him to share in all "goods", especially cultural goods which become particularly precious as soon as the physical needs are well met, for instance, having an ego, doing research and becoming an author. The authority of the leader gives way to a reversal of the old hierarchy; the big egos are dependent upon the little ones. It is as if in the American folk laboratory its people are tested by the affinities and clashes between several current value systems, in order to produce a synthesis which can supplant them and which can be realized in all parts of our shrinking world.

The sociometric laboratories—similar to the physical laboratories of nuclear energy of a decade ago—are experimenting feverishly with various blueprints of a new society. The question is, will the traditional American masochism prevail and the fruits of its labor pass to the world at large, like the Hebrews in transition from Egypt to Palestine who could only see the Holy Land, but not enter it.

PART II

SYSTEM OF SPONTANEITY AND CREATIVITY

CANON OF CREATIVITY

Analysis of the Creativity Chart

J. L. Moreno

Motto: *A science of man should start with a science of the universe. A central model of the universe hovers continuously in our minds, if not consciously, then unconsciously, whether magical, theological or scientific. It influences the form the central model of man takes. An incomplete or deficient model of the universe is better than none.*

The universe is infinite creativity. Spontaneity is the constant companion of creativity. It is the existential factor "intervening" for creative processes to be released.

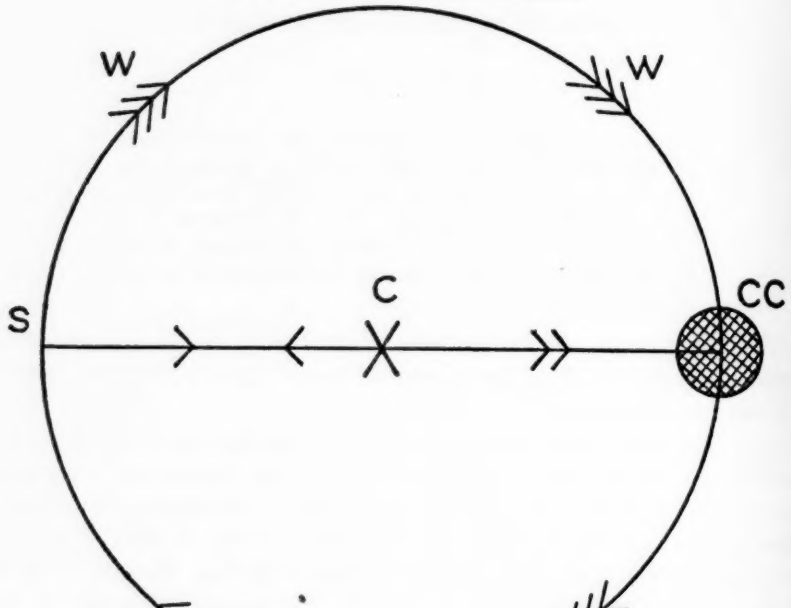
(C) Creativity being the key category of the universe is placed in the *center* of the rotating circle. From the center, a line representing a diameter cuts across the circle. On the left end of the circumference is placed S (Spontaneity), on the right end CC (conserve). They, S and CC, like the two counterweights on a scale, keep each other in balance. The more creativity the universe has, the larger the number of conserves which can be produced and the more spontaneity is required to keep them alive.

Creativity is the ever nourishing maternal center; spontaneity is the ever moving masculine fertilizer; conserve is the product and synthesis of their interaction.

Spontaneity as can be read from the chart has two directions of activity: one direction is indicated by the arrow on the diameter towards C (creativity). It represents interaction with the atoms of creativity, the creative acts in statu nascendi, producing little structured, spontaneous-creative matrices. The other direction of spontaneity is along the circumference of the circle towards the conserves at the other end of the diameter and in reverse from the conserves towards spontaneity. The arrows along the circumference are marked both ways in order to suggest a process of interaction.

CANON OF CREATIVITY

SPONTANEITY - CREATIVITY - CONSERVE



FIELD OF ROTATING OPERATIONS BETWEEN SPONTANEITY-CREATIVITY-CULTURAL CONSERVE (S-C-CC)

S—Spontaneity, C—Creativity, CC—Cultural (or any) Conserve (for instance, a biological conserve, *i.e.*, an animal organism, or a cultural conserve, *i.e.*, a book, a motion picture, or a robot, *i.e.*, a calculating machine); W—Warming up is the "operational" expression of spontaneity. The circle represents the field of operations between S, C and CC.

Operation I: Spontaneity arouses Creativity, C. S——> C.

Operation II: Creativity is receptive to Spontaneity. S <——C.

Operation III: From their interaction Cultural Conserves, CC, result. S——> C——>> CC.

Operation IV: Conserves (CC) would accumulate indefinitely and remain "in cold storage". They need to be reborn, the catalyzer Spontaneity revitalizes them. CC——>>> S——>>> CC.

S does not operate in a vacuum, it moves either towards Creativity or towards Conserves.

Total Operation

Spontaneity-creativity-warming up act $<^{\text{actor}}_{\text{conserve}}$

From Moreno, J. L. "Who Shall Survive?", 2nd Edition, 1953, page 46.

THEORY OF SPONTANEITY-CREATIVITY

J. L. MORENO

The principle which set sociometry into motion is the twin concept of spontaneity and creativity, not as abstractions but as a function in actual human beings and in their relationships. They are called a twin concept, although radically different, because they are found everywhere in the universe strategically linked. Spontaneity is the arch catalyzer, creativity is the arch substance. I formulated this twin concept as the primary principles of existence in my earliest effort (1) to comprehend the living universe in its entirety. It seemed to me that they offer a safe bridge between ontology and science and that they are better able to explain all phenomena of the inanimate and animate universe than any other set of concepts I had known. With them as a guide, it is comparatively easy to construct analogical concepts in all departments of science and to arrive at a monistic view of life. Applied to social phenomena, they made clear that human beings do not behave like automatons but are endowed in various degrees with initiative and autonomy. If there is any primary principle in the mental and social universe, it is found in this twin concept which has its most tangible reality in the interplay between person and person, between person and things, between person and work, between society and society, between society and the whole of mankind, between mankind and the physical world around it. The fact that spontaneity and creativity operate in all dimensions of our mental universe and evoke levels of organized expression caused me to oppose all current psychological and sociological theories, openly or tacitly based upon psychoanalytic doctrine, for example, the theories of regression, frustration, projection, substitution and sublimation, and to replace them by spontaneity-creativity formulations.

SPONTANEITY-CREATIVITY AND ENERGY SYSTEMS

Spontaneity-creativity is *the* problem of psychology*; indeed, it is *the* problem of the universe. I have often been criticized for moving without stopping and signaling from one dimension of conceptualization to another. But it is difficult to convey the full meaning of undeveloped concepts like spontaneity and creativity which are in transition from a pre-scientific to a scientific formulation without using all available objective and subjective

* In contrast to Lipps (2) and Freud (3) who valued the unconscious as the first problem.

resources. I am moving, therefore, from a discussion of spontaneity and creativity in human relations, searching for empirical evidence, to a cosmic outlook.

The time-space-energy frame of reference has become universally accepted in the physical sciences. The concept of spontaneity-creativity has found wide approval in the cultural sciences. The question is whether they can be adapted to one another. Let us first examine, therefore, the physical idea of the conservation of energy. Max Planck, the physicist, gives a vivid account of his first encounter with this principle. "My mind absorbed avidly, like a revelation, the first law I knew to possess absolute, universal validity, independently from all human agency: The principle of the conservation of energy. I shall never forget the graphic story Müller told us, at his *raconteur's* best, of the bricklayer lifting with great effort a heavy block of stone to the roof of a house. The work he thus performs does not get lost; it remains stored up, perhaps for many years, undiminished and latent in the block of stone, until one day the block is perhaps loosened and drops on the head of some passerby" (4).

The law of conservation of energy has become an axiom in the physical sciences and a model for some of the best known psychological and social systems. Take, for instance, the concept of the libido in psychoanalytic theory. In accordance with this theory Freud thought that if the sexual impulse does not find satisfaction in its direct aim, it must displace its unapplied energy elsewhere. It must, he thought, attach itself to a pathological locus or find a way out in sublimation. He could not even for a moment conceive of this unapplied affect "vanishing" because he was, like most scientists of his generation, biased by the physical idea of the conservation of energy. If we, too, were to follow this percept of the energy-pattern when we consider spontaneity, we should have to believe that a person has a certain amount of spontaneity stored up to which he adds as he goes on living—but in smaller and smaller quantities the more he is dominated by cultural conserves. As he performs actions, he draws from this reservoir; if he is not careful he may use it all up—or even overdraw! But the following alternative principle, the principle of spontaneity-creativity seemed to us to be just as plausible as the foregoing and for theoretical ends more productive. As long as this person is trained to rely habitually upon conserves he will try to build up a reservoir of spontaneity, and the greater his savings are, the less frequency will he need to produce new spontaneity; he can live from his savings. But if this person is conditioned not to produce any reservoir of spontaneity and therefore not to rely upon a "bank ac-

count", he has no alternative but to produce in any novel situation the amount of emotion, thought and action demanded from him. At times he may have to use more of this, say spontaneity, and at other times less—in accord with what the situation or task requires. If he is well trained, he will not produce less than the exact amount of spontaneity needed, for if this were to happen he would need a reservoir from which to draw, and he will likewise not produce more than the situation calls for because the surplus might tempt him to store it, thus completing a vicious circle which ends in a cultural conserve (5).

Definitions

The mystic aura which has in the past surrounded such concepts as spontaneity, creativity, love, goodness, catharsis, affinity, attraction, repulsion, choice, etc., hindered their accurate observation and analysis. But I postulated that spontaneity and creativity are observable facts and can be subjected to experiments, laboratory studies and systematic analysis. We may not be able to reproduce in an experimental setting high range creativity or high range spontaneity. They are rare in life itself and hard to observe. They may occur as rarely in an experimental setting but it is able to provoke middle range or low range spontaneity in a controllable environment.

The experimental setting was a theater of spontaneity. Its productions portrayed interpersonal relations and social situations. The quality of performance seemed to depend primarily upon the spontaneity and creativity of the performer in the course of interaction. They, however, appeared intangible and mysterious to the onlooker. Because the spontaneity, creativity and motivations of the participants were left unconscious, the interactional processes taking place before us looked mechanical. The actors looked like puppets manipulated by strings, without spelling out the deeper meaning. "Many hundreds of spontaneity tests were made in this laboratory and many hundreds of productions were presented. Day by day the results of these tests were interpreted and analyzed. This led to a mass of systematic knowledge in preparation for a theory of spontaneity and creativity which could be based upon actual achievements" (5). Every actor was evaluated as to his readiness to act, as sudden or insidious onset, being overheated or at ease and free of anxiety, showing an adequate or inadequate response to a situation. Every production was evaluated as to the creativity of its content and as to the competency of the interactors towards each other. I gradually arrived at a few hypothetical definitions which I expected to be tested, rejected or confirmed in the course of experimentation. The methods

of measurement were raw in the beginning, if one looks at them from the present day of sophistication; but the door was left open for the gradual application of every suitable type of measurement.

A. Spontaneity

Spontaneity is the variable degree of adequate response to a situation of a variable degree of novelty. Novelty of behavior by itself is not the measure of spontaneity. Novelty has to be qualified against its adequacy in situ. Adequacy of behavior by itself is also not the measure of spontaneity. Adequacy has to be qualified against its novelty. The novelty, for instance, of extreme psychotic behavior may be to such a degree incoherent that the actor is unable to solve any concrete problem, to plan an act of suicide, to cut a piece of bread or to solve a thought problem. We speak then of pathological spontaneity. The adequacy of behavior may be unnovel to a degree which results in strict, rigid or automatic conformity to a cultural conserve. Such adherence may gradually obliterate the ability of the organism and the talent of the actor to change. Spontaneity operates in the here and now. The novelty of a moment demands a past which does not contain this particular novelty. Spontaneity research has enabled us to recognize the various phases and degrees of spontaneity as one continuous process, the reduction and loss of spontaneity, impulsive abreactions and the pathological excesses as well as adequate and disciplined spontaneity, productive and creative spontaneity. It recognized also that spontaneity does not operate in a vacuum but in relation to already structured phenomena, cultural and social conserves.

The questions are: What value has a novel response and when is a response adequate? A novel response like two plus two is seven or a horse has 15 eyes and 25 legs may have, within certain contexts of artistic creation, more creativity than the stereotype response two and two is four or a horse has two eyes and four legs; in other words a logically correct response is not always the indication of creative behavior, and, of course, inadequate responses are not necessarily indications of non-creativity. There are all kinds of mixtures possible of near-adequacy and near-novelty which may pass as comparatively creative. Each performance has to be evaluated within its own context. We should not give a higher creativity rating to an individual who says automatically "Two and two is four" although it may be more adequate and useful than a mental patient who says in a manic state at one moment "Two and two is seven", and at another moment "Two and two are five billion", etc. The freedom in association of words and gestures may

have at times the merit of preparing the ground for a creativity state, whereas the one who insists that "two and two is four" may be the hopeless case of an individual who is always right.

An "adequate" response is *appropriateness, competency* and *skill* in dealing with a situation, however small or great the challenge of its novelty. A man can be creative, original, dramatic, but not always have spontaneously an appropriate response in new situations. On the other hand, if he would have only stereotype responses available, however much dramatized and alarming, he would fall within the domain of inadequacy of response. For instance, if a woman is married to a man whose rate of creativity is superior to hers, his competency and skill in social relations, a larger number of significant roles for the setting in which he functions, she is threatened with falling out of the relationship unless she is able to approximate his range and depth of creativity towards herself and others. Another illustration (6) is the creation of new organisms, at the time when animal life was confined to the sea. A new animal organism would arise when it would undergo through the evolutional process, anatomical and physical changes. These changes would be a novel response to the old situation of the sea.

It appeared, therefore, useful to differentiate three types of spontaneity:

1. Whenever a *novel* response occurs without adequacy, that is undisciplined or pathological spontaneity.
2. Whenever an *adequate* response occurs without significant characteristics of novelty and creativity.
3. Whenever an adequate response occurs *with* characteristics of novelty and creativity.

B. Creativity

Creativity manifests itself in any series of creativity states or creative acts. Spontaneity and creativity are not identical or similar processes. They are different categories, although strategically linked. In the case of Man, his spontaneity may be diametrically opposite to his creativity; an individual may have a high degree of spontaneity but be entirely uncreative, a spontaneous idiot. Creativity belongs to the categories of the substance—the arch substance. It is the elementary X without any specialized connotation, the X which may be recognized by its acts. In order to become effective, it (the sleeping beauty) needs a catalyzer. The catalyzer of creativity is spontaneity.

Creativity is related to the "act" itself; spontaneity is related to the "readiness" of the act. The finished product of a creative process, the cul-

tural conserve, has its roots in a spontaneous creative matrix, the original manifestation of creativity. The difference between a cultural conserve and the spontaneous creative matrix of this conserve at the moment when it is springing into existence is fundamental. Let us imagine the music of the Ninth Symphony at the moment it was being created by Beethoven, and let us also imagine the same music as a work of art—a finished product—separated from the composer himself. On the surface, it may appear as if the creative units which went into the Ninth Symphony—its musical themes, its climaxes, its harmonies, etc.—must also have been in its original matrix, and that no difference exists between the one in its state in Beethoven's mind and the other in its conserved state—except only that of locus. It might seem as if it were merely a transposition of the same material—the same sum total of creative units—from one locus in time (the mind of Beethoven) to another (the musical score). Closer inspection, however, will show that this is not true. As Beethoven was walking through his garden trying intensively to warm up to his musical ideas, his whole personality was in an uproar. He made use of every possible physical and mental starter he could muster in order to get going in the right direction. These visions, images, thoughts and action-patterns—both musical and non-musical inspirations—were the indispensable background out of which the music of the Ninth Symphony grew. But all this background (which cannot truthfully be divorced from the state in which Beethoven was when he was truly being a creator) is not to be found in the finished product—the musical score or its performance by a noted orchestra. Only the result is there. The fact that this background has been deleted from our present-day idea of Beethoven is the result of an intellectual trick which is played upon us by millenia of being indoctrinated by cultural conserves. If we look upon the initial spontaneous-creative phase in Beethoven's composition of the Ninth Symphony as a positive phase and not as a transition in the direction of an end-product, we can see in Beethoven's musical compositions, his concepts of God, the universe and the destiny of humanity, in the loves, joys and griefs of his private life and—especially—in the gestures and movements of his body a united pattern from which a *surface* layer (the cultural conserve) can be lifted to satisfy certain pragmatic demands. At the moment of composition, Beethoven's mind experienced these concepts, visions and images in conjunction with the developing symphony. They were integral parts of a creative act—of a series of creative acts. He made a cross-section through them in such a way that only the material which could be fitted into the prospective conserve was included; the direction of the cross-section was determined

by its frame. In this particular instance, the frame was that of musical notation; in another case it might have been the frame of language notation; at still another, it might have been a mechanical invention; at still another, it might have been a human relationship, a matrimonial relationship or a working crew.

We should guard ourselves to diagnose a state of creativity from the signs of easy overt warm-up. We should not depreciate a state of creativity because it has a slow and difficult onset. We should not over-rate overt and overheated activity and under-rate inflexibility and passivity. We should not over-rate unconserved response and under-rate conserved response. We should not be biased in favor of novelty and originality and in disfavor of "traditional" but adequate response. On the other hand, we should not be biased in favor of slow and difficult onset, inflexibility or traditional response; only careful analysis of the objective facts should decide whether it is high, average or low creativity. We usually over-rate the finished product of the cultural conserve, the finished poem, the great music, the balanced interpersonal relation, and the organized behavior of a group as to their actual, present dynamic creativity. We are deceived by the comparative perfection and smoothness of a cultural conserve and evaluate it as if it would be the immediate delivery of a creative act. We underestimate the "spontaneous creative matrix" of a poem, of a symphony, of a love relation, of an initial group formation because of their frequent inferiority as to perfection and smoothness. The sermon on the mount was first a "burning" spontaneous creative matrix long before it became a cultural conserve which every minister can repeat fervently ad infinitum. We are to such an extent enraptured with the high grade conserves of a culture that we forget their origin from poorly structured but spontaneous-creative matrices. It is that spontaneous creative state which we try to bring to a test and all the stages leading up to the cultural conserve, not only the finished product.

C. The Warming-Up Process

The warming-up process, the operational manifestation of spontaneity is a general condition existing before and in the course of any creative act—before and during an act of sleeping, eating, sexual intercourse, walking, artistic creation or any act of self realization. Spontaneity is generated in action whenever an organism is found in the process of warming-up. Whether spontaneity generates warming-up or warming-up generates spontaneity is similar to the question: "Which is first—the chicken or the egg?"

It is useful to differentiate several types of warming-up: (a) *Undirected warming-up,* individual or group—vague, chaotic, confused, moving towards several goals on several tracks simultaneously. (b) *Directed warming-up,* individual or group—moving without any deviation clearly and powerfully towards a creative act, its exclusive, specific goal. Midway between undirected and directed warming-up, there are many perceptual cues emerging. In the course of getting ready to make a response, the individual may try to get oriented—to get out of the fog when driving a car or to find the melody which fits into his musical composition or to find a mathematical formula for a hypothetical question or to find an ending for a poem or an answer to his wife's quarrels. As soon as he is sure what to do, he has sudden flashes of perception, then he acts quickly—registers the ending of the poem in his mind, rushes to the piano and tries the melody, writes a letter resigning from his job or talks to his wife, etc. Often perceptual spontaneity, however, is indistinguishable from readiness to act. (c) *A general state of warming-up*—The individual is aware that a novel response will be required from him in the situation in which he is, for instance: A girl who is taken out on a blind date for the first time, or a doctor who makes his first call in medical practice or a pastor who renders his first sermon. The individual is excited in various degrees of intensity, the organism gets ready for an unexpected event—his heart rate may be increased, pulse may be more rapid, his respiration rate increased, etc. (d) *Immediate warming-up* in an emergency situation. (e) *Chain warm-up*—an idea or feeling being augmented by traveling from one actor to another and returning to the initiating actor.

D. Cultural Conserves

Cultural conserves are products of creativity; they are antipodal to the spontaneous creative matrices which emerge every time a creative process is in the making, in the intensive heat of status nascendi. They aim at being the finished products of a creative process and, as such, have assumed an almost sacred quality. The cultural conserve renders to the individual a service similar to that which it renders as a historical category to culture at large—continuity of heritage—securing for him the preservation and the continuity of his creative ego. But spontaneity and creativity never cease entirely to affect cultural conserves, some "amount" of them enters into every one of its renderings, in a greater or lesser degree. By "amount" of spontaneity, we do not mean amounts which are stored up or conserved. Even the greatest possible amount of stored-up spontaneity and creativity could not make a butterfly anything more than a butterfly. Yet even the

smallest amount of "free" spontaneity, summoned and created by a being on the spur of the moment—a product, in other words, of the moment—is of greater value than all the treasures of the past, of past "moments". Spontaneous creativity—however supreme it may be in itself—once conserved is, by definition, no longer spontaneity; it has lost its actuality in the universe. What "conserved" creativity truly represents, at best, is power, a means of expressing superiority when actual superiority has ceased to be available.

Hypotheses

1. Everything that is *negative* presupposes something that is *positive*. Anxiety, fear and defense are negative categories, they presuppose a positive category, spontaneity. Frustration, projection, substitution and sublimation are negative categories, they presuppose a positive category, creativity. Energy, matter, sexuality, tele are sub-forms of creativity. 2. All men are endowed with spontaneity and creativity although there may be considerable differences in degree of endowment. 3. They exist sui generis. 4. They are not identical with intelligence or memory and not derivative of conditional reflexes or sexual automatic responses.

In order to make experiments feasible, we must be ready to "compromise" and try to simulate a nearly lifelike setting. If the investigator is not willing to compromise but limits himself to the study of spontaneity and creativity on very high levels, he may never be able to get creativity into his test tube and measure and observe it there from close distance. It is the small, average and minute types of creativity which are important in the daily life of human beings, in their work relations, family relations, business relations, etc., and not the great creativity of exceptional individuals. If the concepts of spontaneity and creativity are central to human behavior, they must be traceable in every human act and co-act, on all levels of human performance from the most trivial to the highest. In the application of the scientific method to such high level concepts as spontaneity and creativity, we must make heartbreaking compromises in order to get an experimental contact with them. But we will not compromise to the other extreme, diluting and pushing spontaneity and creativity out of the experiment; they must be continuously considered before an experiment is set up and during its ongoing. We should not sell them "down the river" out of fear that they may complicate the experiment.

If spontaneity and creativity are of central importance in human behavior then there must be some *constancy,* frequency and regularity of

appearance. If there is constancy, then there should be also predictability. We have been inclined in the past to relate spontaneity and creativity only to artistic productions. Sociometrists have tried to point out and I believe successfully, the great amount of spontaneity and creativity operating in interpersonal relations. They were among the first to bring them from the philosophical heaven down to earth.

Spontaneity and Creativity Tests

Optimal conditions created by the actors and for the actors in order to make "tests" feasible are: (a) total extemporaneity of production to (b) extreme realism of the production (not pretending or as if, fictitious), complete carrying out of episodes as they are felt and experienced by the subjects. If they have experiences beyond realization, in situ, in ordinary life, they are given on the stage laboratory opportunity to be realized, "surplus" realization and "surplus" reality.

Optimal conditions created by the experiments for the actor: (a) minimally structured situations alien to the private roles of the actor, and (b) various stages of structured situations up to entirely planned.

The tests, as far as they have been used in our psychodramatic institutes, have tried to probe spontaneity and creativity (a) in interpersonal situations, (b) in person-object relations. It was found that some people have more spontaneity and creativity towards people than towards objects; that some people have more spontaneity and creativity towards objects than towards people; and that some people have low or high spontaneity and creativity towards both. The question whether a life situation can be approximated on the stage so as significantly to correlate an individual's behavior in a stage situation to his behavior in the real world can be answered in the positive; but regardless of success in approximating outside behavior, the crucial material of the psychodramatic laboratory is *the production emerging in the Here and Now*. If total spontaneity and creativity is permitted to the actor as far as they are available to him, his past, present and future will enter the production anyway. It is the immediate frame of reference for evaluation.

System of Spontaneity-Creativity and Einstein's Universe

The experimental findings of spontaneity-creativity research contradict the principle of conservation of energy, at least in the realm of the psychosocial-cultural world of man; but that is how far my authority goes. In the following, I will try to give a picture of the universe, drawing evidence from

other sciences. No science is an island by itself. All sciences must borrow from each other in a movement towards unity.

Let us see how spontaneity-creativity could be fitted into a system of universal energy. In the spontaneity-creativity theory, energy as an organized system of physical forces is not entirely given up. It reappears in the form of the cultural conserve. But instead of being the fountainhead, at the beginning of every process, such as libido, it is at the end of a process, an end product. It is a counterpart to the bricklayer's work of lifting a heavy stone (in Planck's story) which remained stored up and latent, until one day it is loosened and drops on the head of some passerby. Such a counterpart may be, for instance, Beethoven's work stored up in a musical conserve, latent on a gramophone record, until it is let loose years later upon an audience. Beethoven's musical energy did not get lost. Cultural conserves can be explained, therefore, as operating in accord with the principle of the conservation of energy. E (energy) = M (mass) analogous to C (conserve) (Formula I).

But "up to a point" creativity itself may be explainable in energy terms, energy as conceived by Einstein and as long as we leave an area free for the yet unknown processes of creativity (X). Being the ultimate source of all conserves, it may be considered as the most precious, the highest grade of energy in the universe, analogous to some substances in the physical world—tiny particles of metals like uranium store enormous amounts of energy. Einstein's energy is not only conservable and convertible into matter, but also de-conservable. The concept of physical energy has reached such an unprecedented degree of latitude and flexibility that one can postulate that C (creativity) includes E (energy) = M (matter). Energy and matter would be then subforms of creativity, X standing for the yet unknown process of creativity in the universe, C = X + E (or M) (Formula II).

The fitting of the spontaneity-creativity principle into the system of conservation of energy may have appeared to be indispensable as long as the principle of conservation of energy was held to possess absolute universal validity independently from all human agencies. I have raised my voice against the absoluteness of this principle (5), driven to doubt by observations of spontaneity and creativity on the level of human productivity. As long as the doubt was raised from the side of the social sciences only, it may have been pushed aside as fantastic by the "exact" sciences. But my critique has received in recent years support from leaders in physics themselves. Says Planck: "The principle of the conservation of energy, after

all, is an experimental law. Accordingly, although today it is considered to be universal and all-embracing, its validity may one day have to be restricted—and *in fact, such a curtailment of its universal applicability has been sometimes suspected in nuclear physics*" (4). (Italics mine.) The development of nuclear physics has brought at last a revolutionary change in the concept of physical energy. It was brought about by the growing influence of Einstein's relativity theory upon the entire field. It started with Becquerel's discovery that uranium is radioactive but it was Einstein's mass-energy equation which crystallized into a universal law of physics. Gradually the notion began to spread that matter is not indestructible. It began to dawn that matter can be created and that matter can be converted into energy by splitting of the nucleus of certain elements or by fusion of certain elements. This does not mean that the principle of the conservation of energy has been given up; it is a valid rule but its universal applicability has been curtailed.

The rigid, narcissistic picture of the universe of classical physics received another blow when Heisenberg formulated the so-called uncertainty principle which has shaken the validity of another "absolute" law, the law of causality.

The question remaining is the place of spontaneity in this formula. No one has ever seen spontaneity. Spontaneity is a hypothesis. It is supposed to manifest itself in the warming-up process of a creative act. Spontaneity itself has been hypothecated as "unconservable" energy (6), a type of energy which is spent as it emerges, a type of catalyzer which may have its "fellow travelers" in all departments of the universe. If we stretch our imagination, we can compare it with ferments or enzymes, the living catalyzers of chemical processes, or with radioactive elements, the physical catalyzers of energy. Radioactive matter would then correspond to the spontaneous-creative matrices of cultural conserves. Just as radioactive matter ceases to give off rays spontaneously but is stored in the crust of the earth as conserved and stable elements, spontaneous-creative matrices lose their "heat" when transformed into cultural conserves. "There are some forces which produce a perceptual effect without any expenditure whatever of energy. These are what we may call "guiding forces" such as, for instance, the resistance due to the rigidity of railroad rails which forces the wheels of a train forward at a predetermined curve without a predetermined expenditure of energy."* There are apparently forms of energy in the physical universe which, like spon-

* Opus cited, p. 62.

taneity, do not leave any residua. The formula of creativity-energy can then be extended to include spontaneity. It is then S (spontaneity) + C (creativity) + c (conserve) = X + E (or M) (Formula III).

At last the deepest and rarest forms of creativity, as the two great trinities—Silence,—Goodness,—Anonymity and Truth,—Beauty and Love—can be well understood as forms of "surplus" energy which are, similar to spontaneity, not conservable. With them it is like "existence standing still". There may exist spontaneous-creative states without accompanying warming-up processes. Love, beauty and truth go hand in hand because they are offsprings of the same parentage; what is good is also beautiful and truthful; what is true is also beautiful and good; and what is beautiful is also good and truthful. One cannot imagine love without spontaneity, beauty without creativity and truth without both; it is a spontaneous-creative matrix in locus nascendi which unites them.

Atomic nuclear research seems to confirm in principle, or at least does not contradict, the picture of the universe which the theory of spontaneity-creativity has envisaged. Its structure is not permanently set but when novel situations emerge, the responses to the surrounding field take the form of creative acts. As long as the universe was visualized as dominated by eternal, rigid laws, there was no place for "uniqueness" and for "explosive" changes and with it no place for creativity as the ultimate principle, at least not for the on-going, here-and-nowness of it. But a revolution has taken place on the highest level of conceptualization. We can say with greater certainty than ever that the supreme power ruling the world is Spontaneity-Creativity. It has created a rational cosmos which coexists interdependently with man's perception of it but amenable to his intervention as long as he knows and abides by its rules.

References

This paper is in parts a compilation of statements selected from Moreno's books or articles dealing with the concept Spontaneity-Creativity and a reply to Pitirim Sorokin's "Concept, Tests and Energy of Spontaneity-Creativity", Sociometry, Volume XII, 1949, pp. 215-225. See also John Aulicino's "Critique of Moreno's Spontaneity Theory", *Group Psychotherapy*, Volume VII, Beacon House, 1954, pp. 148-158. The quotation signs are left out in order that the reading process may remain undisturbed.

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REMARKS ON J. L. MORENO'S "THEORY OF SPONTANEITY-CREATIVITY"

PITIRIM A. SOROKIN

Moreno's latest theory of spontaneity-creativity appears to me somewhat closer to my notion of creative process (outlined in my "Concept, Tests, and Energy of Spontaneity-Creativity")[1] than his earlier version. Since there were a few important differences between this earlier version and my conception of creativity, these differences are still less significant at the present stage of our views in this field. We both regard the problem of creativity as "*the* problem of psychology" and "*the* problem of the universe". I can add to this that it is *the* problem of all sciences, philosophies, religions, and of all the systems of reality-value.[2] As Moreno correctly states, phenomena of creativity have not only psychosocial, but also biological and cosmic aspects.[3] In this, as well as in several other points, our views are reconcilable.

The disagreements between the two viewpoints concern mainly the secondary items. Most of these were outlined in my article referred to above and need not be repeated here. In this paper I shall mention only a few doubtful points in Moreno's latest "Theory of Spontaneity-Creativity".

1. To begin with, I am not sure that the marriage of spontaneity-creativity to one another, imposed by Moreno, is a happy marriage that

[1] Cf. *Sociometry in France and the United States, A Symposium*, edited by Georges Gurvitch (Beacon House, 1950).

[2] *Cf.* on this my papers: "An Integral Religion" in the forthcoming *Symposium on Religion*, edited by Cole, and "This Is My Philosophy" in the forthcoming *Symposium on Philosophy*, edited by Whit Burnet.

promises a most fruitful study of the properties of each of the married partners and of their progeny. Since only one of three forms of spontaneity has the characteristics of novelty and creativity, while two other spontaneity-forms have no relationship to creativity; and since there are the forms of creativity in which the ingredient of spontaneity is hardly perceptible; it follows that the generic forms of creativity and spontaneity represent not merely two different stages of the same process, but two processes or phenomena different from one another. A large portion of each class of these phenomena exists obviously independently from one another, neither being married, nor closely related to, nor being even in the state of an illicit liaison with one another. For this reason it may be more promising to study each of these processes independently from each other in the total plenitude of its structural and dynamic properties and of its relationships with other phenomena and factors. Such a study may yield a more adequate knowledge of each of these processes in all their manifold ramifications, including the particular case when creative process is catalyzed or is marked by a specific form of spontaneity and when one of the forms of spontaneity becomes creative. This sort of investigation of each of these processes by itself allows one to grasp each process of spontaneity or creativity from its initial "hidden" beginnings up to its terminal point:—the "conserve" in creative process and the final results in spontaneity process, with all the factors, ingredients, forms, and stages involved in its whole "life-history". For instance, with such an approach the whole process of creation of the *Ninth Symphony*, mentioned by Moreno, can be traced from its beginning to its end, with all the relevant details, and all "the existential factors" involved, even more fully, than when it is studied from the standpoint of spontaneity dogmatically linked to Creativity. Among other things the independent approach digs out in the creative process of the *Ninth Symphony* (as in many others) many non-spontaneous, even coercive, elements that play an important role and that remain largely overlooked by the "spontaneity"-approach.

2. The independent study of each of these processes allows also a better analysis of the basically different forms of each process, as well as of different combinations of spontaneity with the non-spontaneous efforts given practically in all creative activities. Thus, a study of the how and why of the highest creative achievements in science and technology, religion and philosophy, fine arts and in all fields of culture shows that in some cases the creative activity begins with the non-spontaneous premeditated decision to discover a mathematical formula (as in the cases of H. Poincare and Gauss) or to create a masterpiece in the fine arts, or a system of

philosophy or to make a technological invention. Having begun their creative work in this non-spontaneous way, the authors force themselves to labor fruitlessly for a long time, until they are suddenly graced by the bliss of a "superrational and supersensory intuition" or spontaneity which comes unexpectedly and in a "twinkling of an eye" delivers the key to the creative solution of the problem.

In other cases, this grace of the spontaneous "supersensory-superrational inspiration" unexpectedly comes before the beginning of a premeditated plan of a creative achievement and actually starts the creative process. Any creative achievement thus always represents this or that combination of a particular form of spontaneity (or intuition or inspiration) with the non-spontaneous, often painfully-coercive, efforts, including the coercion of the rules of the rational, mathematico-logical thought and of the results of empirical observations and tests, always cooperating with the "supersensory-superrational spontaneity-inspiration" in the realization of the final product, "the conserve",—of a creative process.[3] Edison pointedly expressed this verity in his remark that his inventions are due in ten per cent to inspiration and in ninety per cent to perspiration. It is unimportant as to whether we call this "supersensory-superrational" creative grace by "spontaneity", or "intuition", or "inspiration" or by any other term. What is important is that it is an agent necessary for realization of all truly great creative achievements, and that its nature is basically different from the purely rational (logico-mathematical) and sensory-observational ways of creativity. The latter two can produce "the low-grade and mediocre" creative products, but hardly any great masterpiece in any field of culture.

The independent study of the two processes leads also to a more accurate knowledge of the catalyzers of creativity. Moreno states that "spontaneity is the arch catalyzer, creativity is the arch substance". We already know that not all forms of spontaneity serve as the catalyzers of creativity: according to Moreno himself only one of three forms of spontaneity performs this function. For this reason the above formula of his is, at least, very vague and imprecise. What is still more important is the well ascertained fact that the catalyzers of creativity in no way are confined to spontaneity

[3] See these and other varieties of the actual creative processes experienced by the greatest creators and discoverers in science, technology, philosophy, religion, fine arts, and in other fields of culture, including the most revealing testimony of many of these creators, in P. Sorokin, *The Ways and Power of Love* (Boston, 1954), Ch. 6. Cf. there are other details and the literature on these problems.

and represent a widely different set of phenomena. Theoretically and factually almost any phenomenon can serve as a catalyzer or "precipitant" of creativity: calamity and success, defeat and victory, good health and sickness, injustice and unexpected kindness, suffering and happiness, friend and foe, horror and bliss, wealth and poverty, a book incidentally read, a sermon heard, a masterpiece perceived, and so on, depending upon the constellation of circumstances and of the kind of potential creator and his bio-mental state at a respective moment.[4] For this reason a reduction of all the different and numerous catalyzers of creativity to one factor of spontaneity is a factual mistake. The error is due again to the coercive marriage of creativity-spontaneity to one another, imposed by Moreno upon these largely "incompatible" partners.

The preceding lines give an idea of why a study of the phenomena of creativity and spontaneity independently from one another is preferable to an investigation of these phenomena as indissolubly linked to each other, and why I would rather divorce their marriage so lovingly but autocratically imposed upon them by their patriarchal *pater familias*, J. L. Moreno.

3. Of other points of my deviation from Moreno's statements the following ones can be briefly mentioned:

A. In a study of many phenomena—in experimental or other ways—today's fashionable precept to start the study with their "simplest" or "elementary" units, and then to pass on to the study of their more complex forms, processes, or structures, is not always the most fruitful course of investigation. Sometimes, the opposite Aristotelian rule, that it is more fruitful to study the properties of an oak on a fully grown oak than on its acorn, is more advisable. Not denying the urgent need of investigation of "the small, average, and minute types of creativity", advocated by Moreno, at the same time a study of the highest types of creativity is not only indispensable, but often is more fruitful, even more accessible, than a study of the low-grade creativity processes. A careful investigation of the highest types of creativity makes comprehensible most of the properties of the "small, average creativity", while the study of this "low-grade creativity" often leaves undiscovered the most essential properties of the high-grade creativity and of creative processes generally; just as a knowledge of a mediocre musical composition does not give an adequate idea of what musical

[4] See the factual evidence for the variety of the catalyzers or precipitants of altruistic creativity in P. Sorokin, *The Ways and Power of Love,* Boston, 1954, Chaps. 11, 12, 13.

masterpieces are at their highest and best. The same is true of scientific, philosophic, religious, technological, artistic, and other creativity.[5]

I must stress also that fairly often the phenomena of the highest creativity lend themselves for a careful, including experimental, investigation more easily than those of the low-grade creativity. The prevalent opinion that only the simplest or elementary forms of phenomena permit a careful, experimental, precise, and quantitative study is largely a myth, without a solid foundation.

B. The above deviation from Moreno's proposition is closely connected with my other disagreement with Moreno's statement that "there must be some constancy, frequency, and regularity of appearance" of spontaniety and creativity in human behavior. And "if there is constancy, then there should be predictability". Logically, these statements of Moreno about constancy and predictability of spontaneity-creativity stand in a contradiction with his own rejection of the Freudian theory of a "stable volume or quantity" of the libidinal energy of any given organism; and with Moreno's rejection of the universality of application of the principle of conservation of energy. His belief in the predictability of creative processes contradicts his own definition of spontaneous creativity as an adequate and *novel* response. Logically, such a spontaneity and creativity already imply unpredictability: if something can be predicted, it can hardly be spontaneous, new, and creative. These Moreno statements contradict also his acceptance of Heisenberg's principle of uncertainty and "lawlessness" and poor predictability of the phenomena of sub-atomic world and "quanta" jumps. Factually, as a general rule, the processes and final products of an important creativity are largely unpredictable. A careful investigation of many allegedly scientific predictions of creative processes show that as a rule they turn out to be either partially or totally wrong.

Experimentally, any one who would try to predict, say, what sort of musical score Beethoven or any other great creator would be writing on paper, is bound to fail dismally. He is bound to fail even after a most careful study of the character of Beethoven's compositions. The same goes for any attempted prediction of what sort of pictures or sculpture Michelangelo or Rafael is going to paint or mold; what kind of poems, novel, or drama an eminent literary creator is going to write; even what sort of scientific dis-

[5] *Cf.* for a development of, and evidence for, these propositions in my forthcoming volume: ***Fads and Foibles of the Modern Sociology and Related Sciences*** (Chicago, 1956), Ch. 10.

covery a great scientist is bound to make. Not only an outsider, but fairly frequently the creators themselves do not know exactly what is going to be the final "conserve" of their creative activity. We often cannot predict accurately even many routine activities of our own. Our experimental study of the predictions of 106 white-collared unemployed about how or in what kind of activities each of them is going to spend the next 24 hours, then the next 48 hours, and then the day one week from, and, finally, the day one month from the moment of prediction, shows that none of them could correctly predict their own routine activities, and that the margin of error tended to increase with an increase of the time-span between the moment of prediction and the day of the predicted activities.[6] If we cannot accurately predict our own behavior for 24 hours in advance, still less accurately can we forecast the creative activities of especially great creators.[7] This conclusion is strongly warranted by the modern sub-atomic physics. According to its theory, the behavior of a small aggregation of atoms or of elementary particles is largely unpredictable; the realm of such small aggregations of atoms or particles is called the realm of "lawlessness". It is only in an enormous aggregation of atoms or particles (above 2,000,000,000 units) now and then probabilistic uniformities can be observed and fairly precisely described in the form of mathematical formulae. As the great creative activities and the great creators are fairly rare phenomena in the human universe, as they are exceedingly diverse in their character and their results ("the conserves"), and as they are irregularly scattered in space and time, the realm of these activities and of the creators themselves is much more similar to the world of microphysics than to that of macrophysics. For this additional reason the phenomena of creativity are much less predictable than those of the ever-repeated, numerous, mass-phenomena of birth, deaths, marriages, and other large aggregations of psychosocial phenomena of routine kind.

C. Since I do not regard spontaneity as the only catalyzer of creativity, also I do not view the phenomena of creativity, including "the conserves", as something passive, petrified, and devoid of "creative radioactivity", as these phenomena seem to be viewed by Moreno. On the contrary, any genuine creative activity or process appears to me as the most

[6] *Cf.* the details of this experimental study in P. A. Sorokin and C. Q. Berger, *Time-Budgets of Human Behavior* (Harvard University Press, 1939), Chaps. 13, 14.

[7] A detailed analysis of the problem of predictability of psycho-social phenomena is given in P. Sorokin, *Fads and Foibles of the Modern Sociology and Related Sciences* (Chicago 1956), Ch. 11.

dynamic catalyzer and mover in regard to itself and to a host of other phenomena in the world. This equally concerns also the creative "conserves". These can be compared with the Aristotelian conception of God as "the unmoved mover" of everything in the whole universe. Any great creative "conserve"—be it Plato's philosophical system, Buddha's teachings, Homer's *Iliad,* Newton's *Principia,* Shakespeare's *Hamlet,* Jesus' *Sermon on the Mount,* Beethoven's *Heroica* or the *Ninth Symphony,* Edison's electric bulb, Ford's T-model, all such "conserves" have been self-determining their own subsequent modifications and incessantly, for centuries and millennia, have been "starting, moving, changing, transforming, determining, controlling" body, mind, and behavior of millions of human beings, and practically infinite multitudes of physical, biological, and sociocultural phenomena. The totality of these "conserves" make up "the superorganic world of man" on this planet, the universe of the superorganic forces that have largely tamed and subordinated to themselves an enormous amount of the inorganic and organic forces, and that incessantly mold in their own image man himself and all his forms of being and acting. In other words, these "conserves" are possibly the most "radioactive" agencies in the total cosmos known to man. If the creative "conserves" are the final product of the preceding creative *élan,* the "conserves", in their turn, are the greatest catalyzers of subsequent creative *élans.* These reasons explain why, to my mind, any theory that tries to depict the conserves as something static, petrified, devoid of a "creato-active" radiation and stimulation of either its own further development and modifications (in the form of other creative achievements stemming from it and representing its "variations") or incapable to move and change billions of other phenomena, appears to me inadequate and is stubbornly contradicted by relevant daily facts.

D. My views on creativity, outlined in this and in my preceding paper ("Concept, Tests", etc.), determine my sceptical attitude toward the existing tests of creativity-spontaneity. When tested, none of the plethora of various allegedly scientific, artificial tests of our "Testomanic Age", beginning with the Intelligence and Projective Tests and ending with the Tests of Loyalty and Subversity, is found to be adequate, reliable, and truly scientific.[8] Among these pseudo-scientific tests, Moreno's tests of spontaneity-creativity are possibly less artificial and more adequate than almost all the tests of intelligence, emotionality, attitudes, aptitudes, and other psycho-social charac-

[8] *Cf.* for a detailed criticism of the testomanic fads of our age and of an utter inadequacy and unscientific nature of all these allegedly scientific tests in P. Sorokin,

teristics of human personality and especially of social groups. But even so, Moreno's tests are also inadequate so far as the testing of creativity or creative spontaneity is concerned. The inadequacy of Moreno's tests is due largely to an exceedingly complex, "elusive" and largely unpredictable nature of creative process. Any attempt to assess the creative potentiality of an individual or group by the short-time, make-believe acts, and "role-playing" on the psychodramatic or sociodramatic stage amounts to an attempt to assess by a few semi-mechanical and artificial operations the potentialities of the highest, sublimest "energy" of the universe or of God, the Creator, Himself. Because, as Moreno in his *The Words of the Father,*[9] quite rightly says, creativity is the first and the most important characteristic of the Supreme Creative Center of the Universe, no matter as to whether we call it by the term of God—the Creator, or by Tao, Purusha, Brahma, the Oversoul, the Supreme Creative Spirit, the Divine Nothing, or by any other name. A large body of empirical facts show an exceptional difficulty of an adequate assessment of creativity-potentials of persons and groups by any "short-cut" artificial tests as well as sometimes by even a long observation of the real activities of respective persons and groups by their friends, relatives, teachers, and experts. These empirical facts testify also to a very high rate of the wrong diagnoses of all kinds of "diagnostitians" who often elevated into the ranks of a genius many a "smart Alec" and degraded into the ranks of mediocrity or uncreative stupidity many a person that subsequently became a creative genius like J. S. Bach, Beethoven, Verdi, M. Laland in music; St. Thomas Aquinas and Hegel in philosophy; G. Vico in historical and sociological science; A. Pushkin and L. Tolstoi in literature, and so on. In view of this sort of mistakes in an assessment of creativity of persons and groups, I cannot help being somewhat sceptical even toward Moreno's tests, despite these tests being somewhat more adequate than almost all the existing artificial tests of psychosocial traits of individuals and groups.

In conclusion, I want to repeat that my criticisms and "disbeliefs" concern mainly the secondary and procedural points of Moreno's theory of spontaneity-creativity. Our basic approach is to the study of this—most miraculous, and least "mechanical" of all the phenomena known to man —are essentially congenial. We both realize that the enigmatic problem of creativity is the most difficult problem for scientific study, and especially for comprehension of creativity in terms of words, signs, symbols, numbers, notions, concepts—all of which are fit only for definition and cognition of the

[9] Beacon House, 1941.

finite things, phenomena, and processes, and are inadequate for cognition of "the infinity of infinities". The total plenitude of creativity is this infinity of infinities, undefinable and indescribable by any finite words, signs, symbols, and notions. It is equivalent to God and remains *the mysterium tremendum and fascinosum*. If in its plenitude this *mysterium* cannot be grasped by the human finite "mind", some of the ripples and waves and currents of this infinite ocean are, nevertheless, accessible for human cognition because this cognition is also one of the waves of this infinite creativity trying to understand itself, and other ripples of the creative ocean. All those thinkers who have given us some knowledge of some of the ripples of creativity have increased our understanding of it. Moreno has pointed out and outlined a few of these ripples, and thereby enriched our very limited understanding of this—the sublimest, the most supreme, and the most important—form of reality among all the other forms of reality or energy known to man.

SYSTEM OF SPONTANEITY-CREATIVITY-CONSERVE, A Reply to P. Sorokin

J. L. Moreno

Creativity is *the* problem of the universe; it is, therefore, *the* problem of all existence, *the* problem of every religion, science, the problem of psychology, sociometry and human relations. But creativity is not a *"separate"* mystic, aristocratic, asthetic or theological category; if it is on top, it is also on the bottom; it is everywhere; if it is in the macrocosmos, it is also in the microcosmos; if it is in the largest, it is also in the smallest; in the physical and social atom, it permeates the common and the trivial; it is in the eternal and the most transitory forms of existence; it operates in the here-and-now, in this pencil and in this paper, as I am writing these words to the reader.

I. My Dilemma

How did the writing of these words come about? It came about because I have before me the comments of Sorokin to my "System of Spontaneity-Creativity". What I have before me, however, is not Sorokin himself talking. I was not present when he wrote his article, in statu nascendi. What I have before me is already a finished product, a conserve. Here it is on my desk; it was on Sorokin's desk two days ago but now it is here. If it would have

been multiplied in thousands of copies, it would remain the same—unchanged —a conserve. Multiplications do not make a conserve less or more of a conserve; it is in cold storage, dormant energy. I could put it aside and file it, judging that it is unworthy of publication or that it should be published at another time; but as I read it, I got warmed up and was inspired to answer him. What happened—I am trying to give a "phenomenological" description of the process—is the following: As I read it, two things happen. One is the reproduction of Sorokin's article in my mind. I lift it from the paper upon which it is typewritten, so to speak, in order to duplicate it within my own thinking. At this point, Sorokin cannot "add" anything to it, however many times I read it, although it may become "clearer" to me what is expressed in the conserve. But the repetition of reading does not extend the content—and here a second phenomenon enters into the picture—as I begin to react to it. I get, as we say, "warmed up"; all kinds of ideas come to me: "We agree on this point—creativity"; "Oh, this is not what I mean by spontaneity"; "Most people who have read my many books and articles on creativity and spontaneity will immediately realize that the difference is not serious enough, it is a matter of semantics"; "Here is a brilliant suggestion about the study of non-spontaneous factors". But suddenly I read a sentence about *creative* "conserves" which alarms me. Conserves by themselves without an "intervening" factor do not become creative. We build up the conserves and try to make them look like idols. I see the ghosts of Plato and Aristotle coming back. It makes creativity look *stale* and makes a puppet out of God. No! No! Aristotle and Plato have idolized the conserve like hundreds of other philosophers of Western civilization, including Spinoza, from whom God became a huge existential conserve, similar to St. John's logos for whom "The Word" implies an eternal, unchangeable conserve; here he was betraying Jesus who was intuitively set against it. More than the creators, we admire their conserves until they become sacred, like the "Bible", Beethoven's music or the "Pyramids".

At this point, I come to *the decision that I must answer it;* and herewith I answer Sorokin's reply to my theory of creativity. It is a new phase in my warming up process which takes place. Up to this point, I am warmed up to Sorokin's comments, just reacting to them without any further plans in mind; but now that I have decided to answer the comments, my warming up is directed towards a goal of my own—the production of my (this) article. A number of extraneous hindrances enter the situation: my secretary has a cold and may not be able to work for a few days; there is a printer's deadline for the volume; I am scheduled for a lecture tour to start a week

hence; the consequence is that I have to rush or cancel my lecture tour, get a substitute for my secretary or try to delay the deadline. Then there are a number of internal hindrances in my production: if I answer Sorokin, I should give him a chance for another rebuttal;—a certain inertia sets in—I feel tired, I have been overworked and should take a rest;—my wife steps in and says that we should go to Florida for two weeks.—But these various extraneous and internal autobiographic factors, including the coercive ones, are *part* of my warming up process which is the operational manifestation of spontaneity. The sum of it is that I am gradually getting "ready" to write. I am only uncertain as to *what* I should say beyond what I have said so many times, I am at a loss as to what *form* it should take in order to put my ideas across better. In this moment of indecision, I have an inspiration: *to start my response to Sorokin's comments in the manner in which I am doing it "now"* by giving an actual account of what I am going through, convinced that by such an existential mode of presentation, I can make more plausible to Sorokin and to the readers my concept of the relationships between creativity, spontaneity and the conserves. This inspiration sets me off to create; it is the intervening factor, the climax of my spontaneity in this particular situation. It is like suddenly finding the key to a musical composition or the essential line for a poem. On the other hand, my spontaneity without the conserved article before me would have been without provocation. But the extraneous factors which provided the climate for my creative process deserve further mention; there is nothing inspiring about the cold of my secretary, the printer's deadline, about my taking it easy or taking a trip to Florida, at least not for me, at this time. Such extraneous and internal factors are frequently linked with creative processes but by themselves they are not decisive. The fact that Beethoven, as he was starting to write on his Ninth Symphony, suffered from bronchitis was not decisive. There are thousands of individuals who suffer from tuberculosis but only a rare one wrote "The Magic Mountain". There are millions of individuals whose brother was killed in the Revolutionary War but only a rare one decided to take revenge and destroy Czarism.

II. Spontaneity-Creativity-Conserve

The marriage between spontaneity and creativity cannot be dissolved; one can muse over the old saying: "what is put together by the Lord cannot be dissolved but by the Lord". All the forms of spontaneity are linked to creativity—there is no absolute zero. All the forms of conserve are linked to spontaneity—they cannot be reborn without it.

I differentiate three forms of spontaneity: (1) the pathological variety—a novel response but of negligible adequacy. This does not mean, however, that there is not some creativity shown. (2) The stereotype variety—an adequate response but of a compulsory sameness. This does not mean, however, that there is not some novelty and creativity shown. (3) The high-grade creativity variety—an adequate and creative response to a situation of a provocative novelty. Here, spontaneity, creativity and adequacy are harmoniously combined.

I differentiate three forms of creativity: (1) the chance variety—absolute chance interacting with creativity. The result may be chaotic, diffused, incidentally preparing the intervening of spontaneity. (2) Spontaneous creativity—the interaction of spontaneity and creativity begets creative acts. (3) Conservable creativity—the teleological variety, intentionally set towards the goal: conserves; results are not imaginable—without the intervention of spontaneity.

I differentiate also three forms of conserves: (1) the "burned"-out conserve—like a battery which cannot be charged, it is dead. (2) The "inflammable" conserve—still warm, coming from its creator's mind, representing current, collective experiences whose essential content is active in everyone's experience: light music, book-of-the-month club's novels, the popular salesman and politician, the flirt. (3) "Eternalized" or idolized conserves which remain alive and vital for dozens of generations, arousing every generation anew.

III. Three Types of Spontaneity

The novel response of undisciplined spontaneity is not without creativity although of an unstable, fragmentary and dissociated form. This is borne out especially by the experience with mental patients. Their intellectual products may be of little usefulness because of their dissociative character, but they are often manifestations of considerable creative energy. The amount of spontaneity mental patients put into them is often disproportionate to their creative value. Children are another group of people who are bursting with spontaneity, although undisciplined, and who have a wide range of novel experiences; the creative value of their responses is often doubtful from the point of view of an adult world, just like the creative value of the novel responses of mental patients are doubtful from the point of view of normal individuals. But their productions entail creativity just the same. For infants from birth on, every event is a "first time" in feeling, perception and response. There have been frequently noted pathological,

undisciplined spontaneity on the high creativity level. The pathological varieties of religious saints, some of the Christian saints, many of the Hindu yogis and the Mohammedan fakirs belong here. The pathological varieties of geniuses, the demented Nietzsche and Hölderlin, the alcoholic Poe, have given birth to fragmented and dissociated products belonging to the treasury of high creativity, often of greater creativity than the products of normal geniuses.

Adequate but stereotyped response with little novelty and creativity is frequently a mechanical repetition and reproduction of cultural conserves, for instance, musical symphonies, operas and concertos which are recorded on a gramophone disc, no new creativity is added in the moment of release, it is all given. This does not hinder a musical conserve from arousing in the listeners and audience ideas which may become the beginning of new creative processes. Cultural conserves, although dead in themselves, might arouse spontaneous creativity in other individuals. Similarly, religious conserves like the Sermon on the Mount may inspire someone in the congregation listening to new, religious ideas although no new creativity is added to the product. Conserves represent an enormous vitality and reality, not only in our human culture but in the universe at large. The universe is full of them. Every stone, plant and star, every animal organism is a conserve. Creativity is the universe itself, spontaneity is the key to its door and conserves are the furniture, the equipment which fills it. One cannot overemphasize the importance of the conserves which fill the storehouses of our culture—the stony rocks, the museums, the libraries, the cemeteries, our religious and musical heritage, supplied and piled up for thousands of years. The intellectual conserves, as philosophical and scientific systems, are reprinted again and again, unchanged in every generation. Nothing is added to them in the reprint process because their creators are dead, but they can still arouse other thinkers to new variations of these ideas or to new ideas. It is true that a product of great creativity is rarely the result of inspiration alone. There is usually a hard labor which often precedes but more frequently follows the inspiration. A creator will continually return to the original inspirational thought so as to be sure that he has heard well what the demon said to him. The hard labor which is linked to almost every creative effort is the "perspiration" to which Edison referred when he said "Ten percent inspiration, 90 percent perspiration". Perspiration is the folk-word for the warming up, preceding and accompanying the creative acts. The warming up process is not always a *straight line* to the creative act; the track to it is full of handicaps and hazards, blind alleys and retreats. "Non-

spontaneous, premeditated decisions", such as, to discover a mathematical formula, to create a masterpiece in the fine arts or to become a great prophet are made thousands of times without avail until the moment of inspiration comes.

Just as there is a direct chain from existence to spontaneity,→to creativity,→to conserve, there is a reversed chain of equal importance from the conserve back to spontaneity,→to creativity,→to existence. It is a process of "creative circulation". The inspiration which cultural conserves have aroused, feeding the imagination of ever-new generations of people, carrying the cultural heritage through the millenia, should not confuse the basic issue. By themselves, as end products, they are not self-perpetual; they have no spontaneity. They need in every generation new blood, new auxiliary egos to bring them back to life. They are like a sleeping beauty—they need a prince charming to awaken them.

IV. A Universe Without Conserves

A universe which is pure creativity, one in which creative acts are perpetually emerging without ending in conserves is a paradox. A universe in which conserves are "verboten" is meaningless, it is in utter contradiction with the kind of world in which we live. But our fairytales have often a "retroactive productivity" and so let us give our imagination free rein. Let us imagine the emergence of a musical genius like Beethoven, determined not to enslave his spontaneous creativity to the world of conserves, a Beethoven who would prefer to let his infants die in their conceptual state and never be delivered, a Beethoven who would make an effort, at the same time, not to give up the incessant production of musical energy, but who would stubbornly try to remain permanently in that initial creative state—the spontaneous-creative matrix. A Beethoven who would refuse to give birth to musical conserves, but express his musical creativity as it comes to him, hinc et nunc, in statu nascendi. Such creative behavior by itself is by no means a barrier to communication. We can well imagine an orchestra of men or a special type of musical instruments immediately translating and spreading to others every moment of his musical creativity. In a world which lives on spontaneity and creativity alone, the creator would have remained creator and never would have chosen to fill the universe with organisms and people, the universe as we know it. The universe might have remained in that state of creativity in which it was on the first day of creation. God—the Creator, Tao, Brahma, the Supreme Value or whatever name we give to the First Principle, may have decided not to create conserves; the process of the uni-

verse may have moved into an entirely different direction; it would have been creativity without a world. This could be called the universal paradox because God decided to communicate his love directly, not to give away his creativity by creating the world. A Beethoven who would turn against himself and return, so to speak, to the first day of creation to stay there permanently, would be like a modern Prometheus who starts a "creative revolution" on the highest level.

V. Constancy and Predictability Within the System Spontaneity-Creativity-Conserve

But how does constancy and predictability enter the universe? It is through the principle of the conserve. The tendency of creating conserves which remain unchanged like immortal organisms in an everchanging world, is a characteristic of human cultures. Whether the same is true about the non-human universe at large is of course speculation, but it is safely based on the persistent tendency in nature towards organized constellations.

Creative behavior in human relations shows that due to the powerful impact of the cultural conserve, structure, and some degree of constancy as well as predictability results. A science of creativity has a definite foothold in low and middle grade production; it would be harmful if we would try to *protect* high grade creativity from scientific investigation.

If the universe would be filled only with spontaneity and creativity resulting in creative acts and spontaneous-creative matrices, there would be unpredictability of events. It is the conserve process which is responsible for constancy and predictability, at least within limited stretches. On the human level, there is no individual who is not to a large extent dominated by conserves. Spontaneity is linked with cultural conserves in order to release their reproduction. The more the behavior of the actor is dominated by cultural conserves, the greater is the probability of constancy of structure in his behavior. The relative constancy or predictability on large stretches and enormous aggregation of atoms does not contradict the relative unpredictability of small particles.

Spontaneity is the principle of "unconservability" and "unpredictability". Conserve is the principle of "conservability", "constancy" and "predictability". Creativity can remain unfrozen and linked to spontaneity, or it can freeze and be linked to conserves.

It may very well be that the universe is in its small minute microscopic units spontaneous-creative to the highest degree but that it becomes less and less creative the larger the aggregation of atoms are and that the *total uni-*

verse, like a huge conserve, becomes practically uncreative and can be expressed in a mathematical formula. God who started out as a creator, as an unpredictable and entirely spontaneous being, may be, at the end of the voyage, a mathematician, or better, a "theometrician".

VI. Spontaneity, Creativity and the Human Group. Consequences for Sociometric Measurement and the Tests

The theory of spontaneity-creativity has had important consequences for some of the most prominent phases of the social science machinery. (1) It required the social investigators to change their orientation, to turn from an authoritative observer and manipulator into a helper, collaborator or subject in the research project. (2) It granted to the subjects full autonomy of their operations, choices and actions and credit to the validity of their experiences and judgments. It defined them as research actors instead of research objects and guinea pigs, as co-scientists and co-producers in the situations in which they are directly involved. The consequences of this position was a reversal of scientific respectability, from the therapist to the patient, from the criminologist to the criminal, from the anthropologist to the illiterate member of his community, from the social worker to the concrete members of the group which were to be investigated, in other words, the autonomy, the spontaneity, the creativity and the evaluations of the individual protagonists became the salient point of all social investigation, particularly to be considered in the construction of tests and experimental designs. All tests and experimental designs which do not meet with these postulations are tacitly considered false and artificial. The importance of the therapist as an interpreter, of the criminologist as an expert in criminal law, of the social scientist as an observer and as an expert in statistical techniques of measurement, etc., are not impaired in the least by the new outlook which the theory of spontaneity and creativity recommends. However important their supplementary research may be, the actors come first.

The spirit of congeniality in Sorokin's comments has a sharp break when it comes to his evaluation of scientific instruments and the experimental method. I myself have gone just as far, if not farther, in criticizing many of the current test procedures and laboratory experiments which are sold over the counter as the truly "exact" social science but I have never stopped at that; criticism should not be an end in itself, but it seems to me that this is what Sorokin in his fervor for righteousness has been doing at times. It is a position which can easily lead to unproductivity and to sterility. My criticism, however sharp, was only a means to an end. First I tried to show

the faults of present test procedures, experimental methods, etc., and then I tried, guided by the postulates of spontaneity-creativity theory, to improve upon them, to develop instruments which are superior to the existing ones. A careful study of the sociometric test, psychodrama, sociodrama will, I believe, make this clear. There are, of course, no perfect sociological instruments yet available. But because the scientific instruments in social science are not yet adequate, reliable and fully scientific, that does not change the fact that there is a need for them. The question is whether they are not better than nothing and whether they cannot be improved.

My great admiration and friendship for Sorokin does not prevent me—and I am certain he will understand—from expressing openly my apprehension of the deeper dynamics which are underlying some of his opinions. He is a devotee of the "truly perfect". This is the reason why he is for the conserve and sceptical of spontaneity. He is a devotee of theory, this is the reason why he is critical of practice. He is a devotee and master of words, this is why he is critical of actors. Throughout his life he has engaged in developing magnificent theoretical systems of social and cultural dynamics and has shown in recent years remarkable energy in collecting and sponsoring theories of religion, of altruism, of love, but everything on the theoretical, reflective level. He has not engaged himself, at least not to my knowledge, in experimenting existentially with religious or therapeutic creativity and the embodiment of sainthood in his own life. In contrast, my life has been devoted from the start to religious and therapeutic experimentation from my early youth on; it has taken a scientific form in the psychodramatic sessions which I have been conducting for over thirty years as a public service. There is a profound contrast between the theoreticians of religion, sainthood and altruism, St. John, St. Augustine, Plato, Plotin, Spinoza, Kant, Hegel and Sorokin, and the experimenters, producers and practitioners of religion and sainthood. Experimenters like Jesus, Buddha, St. Francis, Baal Schem, and lesser luminaries as Sabatai Zwi, Savonarola and Pascal often look inadequate, imperfect, overbearing, eccentric, ebullient, stupid, even pathological, but they are trying to live a life of truth and prefer an imperfect existence to a perfect theory. I am sure there is a correlation between the genuine experimental attitude on the religious-ethical level and the genuine experimental attitude on the scientific level. I am sure also that there is a correlation between the theoretic-esthetic-observational approach in the religious moral sphere and the non-experimental systematic academic approach in the era of social sciences.

But my greatest disagreement with Sorokin I must express in reference

to the significance of psychodrama. Although he differentiates it from other tests as being "less artificial and more adequate than all the tests of intelligence, emotionality, attitudes, aptitudes and other psychosocial characteristics of human personality and specially of social groups", I challenge him to come and see and live through session after session with his own body and mind, before he minimizes its importance. The operations used in a theatre of psychodrama are not semi-mechanical or artificial, they are the techniques of creative genius naturally used by him. They cannot be cold and artificially concocted, or they will fail; the conductor of a session has to rise to the occasion. I have often pointed out the difference between "existential validation" and scientific validation and in psychodrama its existential validation has to be recognized before a scientific validation can be undertaken intelligently. It is in our time the only modern invention adapted to people who live in a disrupted, technological world which combines a religious and scientific spirit in a unique group expression.

No one has ever claimed that the elusive experiences of great religious, artistic or scientific genius can be "tested" on the psychodrama stage. But they can be *presented* and *experienced* there. The term "test" is abused, it is often applied to operations which have nothing in common. The psychodramatic session has all the characteristics of a "meeting". I believe that if a Jesus Christ or a Buddha, a Socrates or a St. Francis should ever step into our theatres of psychodrama, he won't say to us "I cannot be creative here, I cannot be myself". He will fill the theatre with the genius of which he is an expression, by day and by night, in all the moments of his life. It will shine through even our modest catacombs. The potentialities of the highest, sublime energy of the universe or of God, the Creator, are not "elusive". If He is present, it will be felt.

VII. Summary

Summing up, this is my position: (1) My existential authority to discuss the process of creativity on the highest level derives from an adventurous life which I have led, preceding the First World War. It took me at the end of it to a castle near Vienna, whene I spent several years in meditation. The experiences which I had I tried to put into words in a book which has become known as *Das Testament des Vaters* (1920) in which the idea of the I-Creator and the principle of creativity were proclaimed as the first principles of the universe. All that I know about these elusive things and all I have done on an experimental level since stems from these days. (2) There is a danger in "elevating" the concept of creativity so that it becomes the

property of aristocrats of the mind only. There is a danger in making it an exclusive property for exclusive people. Beware of a dignified universe—creativity is not reserved for special people, it is an universal endowment which can be found in all humans, high and low. This is the profound reason for the general recognition of greatness by the humblest and least educated people, their appreciation of truth in an exemplary life, of great poetry, music and art. (3) The world is full of old fashioned "lovers of conserves". It is the hardest habit to break, even including drug addiction and coffee. The conserve is so comforting and maternal, it gives security to the weak, the sick and the old, and reassurance to the isolate. (4) The term and concept "spontaneity" has undergone a veritable revolution. As recently as fifty years ago, spontaneous behavior meant an automatic and reflexive response. The linking of spontaneity to creativity has been an important discovery, or better "rediscovery". All old fashioned and conserve-loving writers of the past, including Aristotle, Plato and Spinoza have neglected to see the link between them. (5) Phenomenological analysis supports the differentiation between the factor (spontaneity) which prepares and supports by positive or negative incidents, then stimulates and motivates the getting ready for the act—and the factor creativity, the act itself. In the process of constructing a system of the universe, we would be free to put into creativity everything which we have put into spontaneity, giving the concept of creativity the position of all-containment; or conversely, to put into spontaneity everything which we have put into creativity, giving the concept of spontaneity the position of all-containment. Such merger of spontaneity and creativity into a single concept is in contradiction with the existential experiences during the process of creating. (6) From the point of view of a well reasoned out architecture of the universe, a single category like creativity does not do. It is like trying to build a house with bricks alone; the mortar is necessary to hold them together. Spontaneity is the mortar. But also creativity and spontaneity alone would not do, looking at the world realistically. The finished product, the house is here, the conserve. Some think only of the bricks, others only of the mortar, others again only of the houses, but actually all three principles are necessary—spontaneity, creativity and conserve—to make the universe a completely functioning enterprise.

SPONTANEITY THEORY OF CHILD DEVELOPMENT

J. L. Moreno and Florence B. Moreno

The Situation at Birth as a Primary Phase in the Warming-up Process to Spontaneous States

Situation at birth. In order to understand the rôle of spontaneity in the situation at birth, we must analyze the organism which may call for its aid. By an accident of nature, it seems the human infant is born *nine* months after conception. He might have been born many months later, and the newborn might have sprung off nearly ready to take care of himself, as nearly ready as some of the newborns among other vertebrates.

One part of his organism inadequately developed is the brain. The condition of the brain the first few weeks after birth, is in a state of revolution. The newborn's fore-brain is incomplete. Brain centers are not yet developed. Brain circulation is not yet well established. The capillary system is inadequate. Speech centers and muscular coördination for walking are not developed. Even sucking, swallowing, crying, breathing, and eliminating are not yet well established immediately after birth. These factors are partly responsible for the high mortality rate during the first few months of extra-uterine life. The situation of an infant at birth makes it almost a miracle that he is born alive. He moves from a closed compartment into an open, unlimited space. He moves from eternal darkness into a lighted and multi-colored environment. He moves into a sphere of vision and sound. He changes from limited positions into a milieu in which locomotion and direction are indispensable. He changes from a parasitic existence, being nourished via the mother's placenta, into an existence in which his own activity is indispensable in food taking and elimination. He changes from a state of constant sleep into a state of gradual awakening and awareness of the world around him. He changes from a situation which provides him with a safe equilibrium to a world which is to be conquered if he is to survive in it, and in which he has to gradually develop an equilibrium of his own. He moves into this world with such a suddenness, that his successful adjustment is one of life's great riddles. Within a few minutes, he practically changes from one world to another.

The infant is moving, at birth, into a totally strange set of relationships. He has no model after which he can shape his acts. He is facing, more than at any time during his subsequent life, a novel situation. We have called this response of an individual to a new situation—and the new response to

an old situation—*spontaneity*. If the infant is to live, this response must be positive and unfaltering. It must be ready, on the spur of the moment. This response may be *more* or *less* adequate. There must be a certain amount of this s (spontaneity) factor at least in crucial moments available. A minimum of spontaneity is already required in his first day of life.

The physical growth of the embryo's organism and its anatomical readiness for the plunge in the last month of pregnancy cannot be considered a sufficient explanation for being born alive and living abundantly thereafter. There must be a factor with which Nature has graciously provided the newcomer, so that he can land safely and anchor himself, at least provisionally on an uncharted universe. This factor is more than and different from the given energy conserved in the young body of the newborn. It is a factor which enables him to reach beyond himself, to enter new situations as if carrying the organism, stimulating, and arousing all its organs to modify their structures in order that they can meet their new responsibilities. To this factor, we apply the term spontaneity (s factor).

It is secondary for the purpose of this study whether there will be found special types of genes which are responsible for the development of the s factor, or whether the s is a factor operating independently from the genes. But we favor the hypothesis that the s factor is neither strictly a hereditary factor nor strictly an environmental factor. It seems to be more stimulating to the present state of biogenetic and social research to assume that there is within the range of individual expression an independent area *between* heredity and environment, influenced but not determined by hereditary (genes) and social forces (tele). The s factor would have in this area its topographical location. It is an area of relative freedom and independence from biological and social determinants, an area in which new combinatory acts and permutations, choices and decisions are formed, and from which human inventiveness and creativity emerge. The rise of the s factor presupposes that the functions of memory and intelligence as specialized centers of the cerebral cortex are in formation and with this its own differentiation from them as a special function. Although single and multiple areas of the spontaneity function in the cortex are as yet unexplored and even hardly a conscious problem to the brain pathologist, the fact that this s factor can be demonstrated and isolated in action and in behavior tests of children, indicates that a somatic counterpart exists. The great plasticity of the infantile brain suggests that it is well disposed to favorable interaction with s factors. The high sensitivity of the brain tissue for s factor or—symbolically speaking—the original spontaneity of the brain tissue may

be the reason why the later and gradual specialization of the brain into centers and functions is never rigid and absolute. Some degree of spontaneity of the brain tissue remains which serves in emergencies as a last resort to the nervously afflicted. It may be of value to review the brain development from the point of view of spontaneity theory, and to estimate the comparative degree of spontaneity which every part of the brain retains.

Warming-up process to a new setting. The first basic manifestation of spontaneity is the *warming up* of the infant to the new setting. The warming-up process is a phenomenon which can be measured. Its expansion depends upon the kind and degree of novelty to be met.

The physical self-starters, as it has been observed in spontaneous experiments with adults, work by conscious provocation of a simple act which, if properly aroused, begins, by its own momentum, to be followed up by other involuntary and voluntary actions; for instance, the tempo of breathing increases two to three times beyond the original voluntary step. The pulse count goes from seventy up to a hundred and twenty or more. These involuntary phases in the warming-up process (provoked by an initial conscious step) often associate simultaneously other involuntary activities in which the neuro-muscular systems play a leading rôle, such as, perspiration, movements of arms and legs, breathlessness, loss of balance, facial expressions of panic and anxiety, and gutteral inarticulate sounds and words. Aimed social actions may further advance the warming-up process into the realm of inter-personal relations.

In the psychodramatic situation, furthermore, the whole world into which the actor enters—the plots, the persons, the objects in it, in all its dimensions, and its time and space—are novel to him. Every step he makes forward in this world on the stage has to be defined anew. Every word he speaks is defined by the word which is spoken towards him. Every movement he makes is defined, aroused and shaped by the persons and objects he encounters. Every step he makes is determined by the steps of others towards him. But their steps, too, are, at least in part, determined by his own steps.

We know from the study of the warming-up process in adult performance and inter-personal relations that categories of self-starters can be differentiated, that is, physical starters and mental starters. The differentiation into two separate ways of starting is not yet available to the infant. There appears to be very little mental activity in the newborn's starting. We can well assume therefore that he makes use only of physical starters. The physical starters continue to be the rescue-starters in all warming-up

processes throughout the life span. The adult resorts to them, especially in emergencies or when taken by surprise. As in the case of the infant, he can be so absorbed in his warming up to a spontaneous act that he can be, manifestly at least, void of mental images. Unlike the infant, the adult has, of course, developed mental, social, and psychochemical starters, which independently may initiate his warming up as well as interact with physical starters.

In some of the experiments made with adults using physical starters as a means of warming up—many subjects failed to reach the level of *mentation*. They stopped abruptly in the middle of the act and gave up. It was apparent, then, that the warming-up process does not have to reach the level of mentation but can *terminate* at any point in the process below this level. This may be the infant's way of warming up. He uses physical starters, the act is terminated more or less below the level of mentation and provoked by physical stimuli.

In the birth situation, the physical starters are stirred up long before the act of birth takes place. The "to-be-born" embryo is using his own physical starters, his head or feet, to push against the muscular walls of the womb in order to gain momentum gradually. When he comes to numerous dead ends, he is rescued and aided from time to time by the mother's own physical starters, voluntary action and involuntary muscular contractions, as a process in warming herself up to an act of expulsion. The moment of birth is the maximum degree of warming up to the spontaneous act of being born into a new setting, to which he must make a rapid adjustment. It is not a trauma, but the end stage of an act for which nine months of preparation were required. The infant is the actor. He has to act in rôles without having an ego or personality to act with. Like the impromptu actor, every step he makes in the world is new. He has to act quickly on the spur of the moment—that moment when a new breathing apparatus is put into function, or that moment when he must, for the first time, suck fluid from the breast or bottle.

As we have pointed out, the infant binds its spontaneous energy to the new milieu, via the *physical starters* of the warming-up process. As we know, it would not be successful in this effort, if the *mental starters* of auxiliary egos—mothers, midwives, and nurses—in this milieu would not come to his rescue, i.e., by caring for and feeding him. Of course, the warming up to the act of birth has been a perpetual drive to the infant for such a long period that any *delay* on the part of these auxiliary egos once the machinery of delivery is in process cannot but stimulate the self-starting of the infant. If

this delay surpasses a certain point, this effort exhausts the infant and, as the mother becomes exhausted, an advantage is turned into a calamity.

The warming-up process is, therefore, a concrete, tangible, and measurable indication that the s factors are operating. It is from the analysis and measurement of the warming-up process that we can determine the presence and the action range of the s factors. If there is no sign of warming up, we conclude an absence or loss of spontaneity. If there is some degree of warming up detectable in one sector of an area, then we conclude that a corresponding degree of spontaneity is operating in this sector. It does not indicate, however, that s factors operate in other sectors of a given area, or in other areas, as long as no signs of a warming-up process are manifest there. An optimum or a maximum degree of warming up would indicate that s factors operate in a given area in an optimum or maximum degree. An over-heated warming-up process would indicate that a surplus of s factors are operating in a given area—that is, beyond what is required for an equilibrated act.

The warming-up process manifests itself in every expression of the living organism *as it strives towards an act.* It has a somatic expression, a psychological expression, and a social expression. The varieties of its expression depend upon the differentiation of the organism and the environment in which it exists. The somatic expression of the warming-up process is specialized around many *focal* areas (zones), which serve as physical starters to warming up.

The Function of the Warming-up Process and the Matrix of Identity

Zones as loci nascendi[1] *for the Warming-up Process*

It is paradoxical that the infant has at birth an organism whose anatomic and physiological unity is never greater. But he has no world of his own within which to operate. He is an actor—without words and almost without a cerebral cortex. He is compelled to form his world on the

[1] "I have observed, experimenting with numerous patients and non-patients, that *every warming-up process which covers a small range of the personality can be absorbed and for the time being undone by any warming-up process which has a wider range but which includes these parts at the same time.* I have seen this mechanism at work so often that I feel justified to consider it as a practical rule. It is on the basis of this observation that a significant therapeutic technique developed". See Moreno, J. L. "Interpersonal Therapy and the Psychopathology of Interpersonal Relations", Sociometry, vol. I, Part 1, 1937.

basis of small and weakly related zones scattered unevenly over the body. These zones can be divided into operational zones and non-operational zones. The significance of every zone is that it is formed in behalf of an indispensable function of the infant, and therefore arouses the infant to concentrate upon the acting out of this function. Any time an object comes near the visual zone, a warming-up process takes place in which the neuro-muscular system of the zone plays a leading rôle.

Each warming-up process has a focus. It tends to be localized in a zone as its *locus nascendi*. However, the first sensitized areas—sensitized by these acts of warming-up—are not literally attached to the skin of the infant. There is no mouth zone, anal zone, actually, but zones of which the mouth or the anus are a part. The zone is, in this "sociometric" sense, an area to which, for example, the mouth, the nipple of the mother's breast, the milk fluid, and the air between them are contributing factors. Whenever these components come to a focus, the zone emerges into action.

In addition to being a zone, related to a given organism, it becomes the *locus nascendi* of starters warming up towards objects and persons. It becomes the focal point of the spontaneous act itself. On the physical level, one zone is never entirely separated from every other zone; it involves at the time of functioning, to some extent, the whole organism. But we are dealing here with a construction of the experiential actualities of the infant and not with his physical set-up; the warming-up process with a physical set of starters of a particular zone has the tendency to separate and isolate that zone on the actuality level *more* than the physical situation would indicate. In the act of taking nourishment, for instance, the mouth becomes the focal point for a specific warming-up process on the experiential actuality level, even though hunger pangs and contractions in the stomach involve indirectly the entire organism. This focal point of interest appears to make the infant more remote as to what is happening to another zone of his body than he would be in a period of inaction of that zone. Focusing, therefore, on a specific warming-up process increases attention upon the immediate act, and thus a tendency towards increased specialization of numerous tracks for the corresponding warming-up process is encouraged.

The various zones develop gradually various relationships on the actuality level. Certain zones tend toward co-action and coöperation, as the mouth zone with the throat zone, the bladder zone with the anal zone, the visual zone with the hearing zone, etc. Certain zones tend to exclude one another—as the manual zone and the throat zone, the bladder zone and the visual zone. Some zones tend to remain neutral. As the infant grows in

structure, the experiential actuality level becomes more complex. Certain zones, which have been comparatively separatists, begin to interact more, and turn out a chain of zones or bodily segments. Accordingly, on the experiential actuality level, the particular warming-up processes will interact, and the result will be that one set of physical starters, let us say that of the oral zone, will gradually arouse the throat zone and the anal zone and lead to a sort of counterpart of the bodily segmentation—a segmentation on the actuality level. Therefore, the organism of the infant which consisted originally of so and so many separated segments superimposed upon the various zones of the organism, will begin to merge them into large areas of the body. The larger the area of the body which the warming up takes into its strides, the larger the number of neuro-muscular units stimulated. The infant will begin to be identical with a large area of the body at one time, with another large area of the body at another time—not knowing that they actually belong together, and yet far from discovering that some day he will be labeled their individual owner.

The auxiliary ego as a part of the infant's warming-up process and rôle-playing. Just as some infant needs a helper to be born, he also needs aides in order to eat, sleep, or move around in space. From the point of view of the child, these helpers appear like extensions of his own body, as he is too weak and immature to produce these actions by his own effort. They have to be provided for him by the outside world—mother, father, or nurse. We have called an extension of one's ego, which is necessary for his adequate living performance and which has to be provided for him by a substitute person, an auxiliary ego.

The Universe of the Infant

The matrix of identity is the infant's social placenta, the locus in which he roots. It gives the human infant safety, orientation and guidance. The world around it is called the *first* universe, as it has many characteristics by which it is set apart from the final, the second world. The matrix of identity breaks up gradually as the infant becomes more autonomous—that is, some degree of self-starting develops in one function after the other, such as in feeding, eliminating, reaching, and locomotion; his dependency upon auxiliary egos begins to decrease.[2] The first universe ends when the infantile experience of a world in which everything is real begins to break up into

[2] "According to our hypothesis a mental operation like all-identity must have preexisted in the infant before an operation like identification can take place". See Moreno, J. L., "Sociodrama", *Psychodrama Monograph*, No. 1, 1944.

fantasy and reality. Image-building develops rapidly, and the differentiation between real and imagined things begins to take form.

Long period of infancy—a characteristic of the first universe. The theory that the intra-uterine existence of the embryo is too short, implying that a longer pregnancy might be more desirable, is a misapprehension. If the pregnancy state of the human infant could be prolonged by an experiment of nature or, by some technological device, be extended from nine months, let us say, to fifteen months, the result might be that the human infant would be born fully developed and would compare much better with the primate and other vertebrate infants. He might arrive quite independent and self-sufficient, but he would have sacrificed the opportunities for which the social placenta prepares him to a prolonged incubation in a narrow rebounding environment. He would have sacrificed the productive culture-bearing association with active and highly organized beings, to a life in isolation; last, but not least, he might have arrived, because of his comparative self-sufficiency, much less in need of help but also less sensitive for the acculturation of the social heritage incorporated in the auxiliary egos of the new environment. Our conclusions, therefore, are that any prolongation of the human pregnancy would be a calamity for the infant, that its length seems rather well planned than otherwise, and that the infant is born at a strategic moment for the development of his spontaneous potentialities. If he dares to be born less self-sufficient than other animals, it is that the s factors and resourcefulness of the matrix permit him the "jump". Last but not least, the human species is the genius among the primates—and a prolonged latency period is commonly found with geniuses.

Infantile amnesia and the act-hunger syndrome. One of the important characteristics of the first universe is the total amnesia which we have for about the first three years of our life. It cannot be satisfactorily explained by the inferior development of the brain; the amnesia continues long after the cerebral cortex is fairly established. It cannot be explained by unconscious mechanisms such as repression, because little is registered which *can* be remembered, and nothing can be repressed which is not remembered.

This amnesia is total and indisputable for the older child or adult, looking back from his stage of development, trying to remember the inner and outer events which have surrounded him during the first three years of life. For the infant and the young child growing up, the situation is somewhat different. Some registration takes place, certainly after the first few months as the infant shows signs of remembering certain persons and objects like the foods and the mother with whom he has been intimately acquainted. But he

forgets easily—his remembering has a short span. The amount of registration of acts and events must be, therefore, weak and rare.

Our explanation of amnesia is based upon the warming-up process to a spontaneous act. Hundreds of spontaneity tests with subjects of all ages have demonstrated that in order that the subject may remember at a later date what has taken place during the act, he must register the events as the warming up to the act goes on. A certain part of his ego must set itself aside as a sort of *internal* participant observer and register the events. Only if an event has been registered, can it be remembered, and only if it has been remembered, can it be forgotten. Only events which have been registered or remembered can be repressed. The conclusion is that, in such cases, when nothing is remembered by the subject of acts and events which have taken place in and around him, such an inner participant observer did not develop. It did not establish itself, because every part of the subject of the person was included in the act.

The experience of the infant can be considered as a parallel on a magnified scale of the fully spontaneous subject on the psychodramatic stage. We must assume that the infant warms up to spontaneous acts with such a degree of intensity that every particle of his being participates in it—that not the least fragment in it can be left out for purposes of registration. Where there is no registration, there is no remembering possible. The infant doesn't permit any part of its being to function in any reference except that of the moment—the immediate situation. This undivided absorption of the infant in the act[3] to which it is warming up is the basic reason why the two dimensions of time, the dimension of the past and the dimension of the future, are undeveloped, or at best, rudimentary. It is the *past* in which we store our memories, and it is the *future* which may profit from their registration.

[3] "Emphasis upon contents results in the split of the individual into an *act* personality and a *content* personality. We found it a valuable hypothesis to assume that two different memory centers develop, an *act center* and a *content center,* and continue as, in general, separate structures without connection. A content is not received at the same moment when an act arises, but the former in a dull, untoned state and the latter in a highly heated state; they trace in the nervous system different paths. In consequence they do not recur simultaneously, filling one moment, uniting the whole personality with one action, but at different times, separated from each other. The material learned does not reach the act-center of personality. A shut-in memory develops and prevents the integration of the factual knowledge into the active personality of the individual. The knowledge remains undigested, unabsorbed by the personality, and hinders its full influence upon his activity and judgment". See Moreno, J. L., "Who Shall Survive?", 1934, page 329.

Our attempts at measuring the memory span of infants have shown that it *increases* in backward range as well as in clarity as the infant grows older, but the amount of registration and consequent memory fixation is continuously swept away—flooded out by the overwhelming absorption of the infant in the acts in which he is involved at the moment. The infant develops intermittently, so to speak, a *retroactive amnesia* even for the slight amount of registration of acts and events which he has been able to retain. The act-hunger of the infant is so great and so incessant that he uses all his energy up for this and as little as possible, for such an apparently negligible thing as remembering (this remembering is done by the auxiliary ego for him). We must conclude that the recurrent retroactive amnesias of the infant sum up to *the total amnesia effect* which the older child and the adult have for the first three years of their lives. As the structure of time, its past and future dimensions, are so weakly developed in the infant, learning by remembering is not possible. The foundation of his learning process must have a different basis. As we know now, it has a special anchorage—the matrix of identity.

The first great area of human existence stretching over nearly three years of life, seems to belong together like a domain, a world of its own. It has characteristics quite different from the types of experience which the child has after the past and the future begin to take more specific shape, and the breach between fantasy and reality initiates two basically different trends of warming-up processes. It seems, therefore, a useful theoretical construct to consider infancy as the first universe, a special *age* of life, such as childhood, adolescence, adulthood, and senescence.

Progression or retardation; trauma or catharsis. The "long" period of infancy has been interpreted by psychoanalysts as a process of retardation and compared with the retardation of the neurotic adult. But it seems to us more plausible to judge that the test of a maturation process lies in its achievement. The early termination of intra-uterine existence can be explained by the superior act-hunger of the human infant and the search for an expanding and more stimulating universe than the intra-uterine milieu provides. Some relative slowness of one function or another, for instance self-feeding, may be a proper sacrifice for more future-bearing lines of development. The long period of dependency of the human infant can be explained by an eager apprenticeship, progressing, maturing, and graduating into a world which is incomparably more complicated than the world into which the primate infant graduates, and for whose successful integration he needs incomparably greater resourcefulness (s factor).

Another psychoanalytic concept is that of birth as a trauma from which shock an infant has a hard time to recover. It would be analogous to psychodramatic shock if we could force the infant to stay in the mother or to return to his intra-uterine existence. But the act of birth, for which he and his maternal partner have been preparing themselves for nine months, is the opposite of trauma. It is a deep-reaching catharsis for mother as well as infant. A spontaneity theory of child development evaluates the growth of the infant in positive terms, spontaneity-creativity, in terms of progression, rather than in negative terms, in terms of retardation and regression.

Infantile time and the concept of the moment; infantile space and the emergence of the tele. The subjective concept of adult time has three dimensions—past, present, and future. The infantile time has but one dimension—the present. The infant warms up to immediate situations, if he warms up at all, and to immediate time. This is exemplified in the feeding act. He behaves as if he would suffer from an *act-hunger* syndrome. To his act-hunger corresponds the category of the present—of the moment.

The dimension of the past develops much later, and it is in conjunction with a past that concepts like cause or unconscious can develop. It is a fallacy to refer to the unconscious as if it would be the substance from which all mental phenomena emerge. For an act-personality, like that of the infant, living predominantly in acts, the concept of the unconscious does not exist.

The psychological space of the infant develops parallel with the telencephelon. Physical distance receptors, such as visual and auditory, enable him to develop the physical contours of space. They by themselves, are unable to develop a relationship between the infant and the persons and things around him as he doesn't experience them as outside or inside of him. They appear as one manifold—the matrix of identity. In the earliest phase of the matrix of identity, nearness and distance are not yet differentiated by the infant. But gradually the sense for nearness and distance develops and the infant begins to be drawn towards persons and objects or to withdraw from them. This is the first social reflex—indicating the emergence of the tele-factor, and is the nucleus of the later attraction-repulsion patterns and specialized emotions—in other words, of the social forces surrounding the later individual. It seems that parallel with the development of physical receptors, visual and auditory, of the infantile cerebral cortex, the tele factor develops stimulated by them, and in turn, stimulates their development. The tele factor must, in its earliest form, be undifferentiated, a matrix or identity tele; gradually, a tele for objects separates itself from a tele for persons. A positive tele separates itself from a negative tele, and a tele for real objects from a tele of imagined objects.

The dreamless state of the infant. Origin of the dream and the unconscious. It appears that the infant goes, in his first universe, through two periods: the first period is the period of all-identity, in which all things, persons, objects, including himself are not differentiated as such but are experienced as one undivided manifold; the second period is the period of differentiated all-identity or of all-reality, in which objects, animals, persons, and finally himself have become differentiated. But there is no difference yet made between real and imagined, between animated and dead, between appearances of things (mirror images) and things as they really are. If this theory is correct, a good argument can be made for the idea that the infant does not dream during this first period. It has been pointed out in our discussion on amnesia that the infant is unable to register or remember events, and this inability is the greater the younger the infant is; that, in itself, would limit the possibility of dreaming to such dreams as are provoked momentarily in the course of sleeping. It would exclude dreams which are provoked by events in the past, however recent those events may be. In other words, the only type of infantile dream which can be theoretically visualized is the one which is immediately provoked by a situation which stimulates or scares the infant on the spur of the moment, without awakening it. There is, however, another argument which cancels the possibility of even such dreams provoked by immediate situations. All dreams which we have objectified on the psychodramatic stage as well as those analyzed by previous investigators do *not* possess the structure of all-identity experience, in which things, persons, and objects are undifferentiated, but have already the structure of the all-reality experience; that is, in all dreams, things, persons and objects are differentiated, although there is *no* differentiation between real and imagined, between the appearances of things and their reality. This would indicate that dreams, *as we know them,* cannot be produced in the period of all-identity; indeed, the dream phenomenon must have its emergence long after the period of all-reality has started to break up. *The beginning of dreaming must be related to a decreasing intensity of the act-hunger of the infant.* The dream-hunger of the infant would increase in inverse proportion to the act-hunger of the infant. The dream-hunger will be greatly enhanced when the breach between fantasy and reality is experienced by the child.

This would do away with the idea that infants dream from birth on—that the analysis of dreams can be used as the major route to the understanding of the infantile behavior of the first weeks. Psychoanalytic interpretations based on this premise would not fit into this hypothesis. Freud says in the "Interpretation of Dreams": "What once prevailed in the waking

state, when our psychic life was still young and inefficient, seems to have been banished into our nocturnal life. . . . Dreaming is a fragment of the superseded psychic life of the child". He says further: "Dreaming is, on the whole, an act of regression to the earliest relationships of the dreamer, a resuscitation of his childhood, of the impulses which were then dominant and the modes of expression which were then available. Behind this childhood of the individual we are then promised an insight into phylogenetic childhood, into the evolution of the human race, of which the development of the individual is only an abridged repetition influenced by the fortuitous circumstances of life. We begin to suspect that Friedrich Nietzsche was right when he said that in a dream 'there persists a primordial part of humanity which we can no longer reach by a direct path . . .'." We are here at the core of one of Freud's most profound inspirations. But granted that the dream is a hangover from early childhood, the generalization he drew from it is probably an error. The dream does not reach endlessly into the past, but it has a beginning, an origin. *It cannot originate earlier than the period in which wake existence has a structure similar to the nocturnal dream.* The structure of the wake life of the infant immediately after birth, however, is far more primitive than the structure of the nocturnal dream reveals. We cannot discern in the structure of the matrix of identity—which dominates the wake life of the infant—anything resembling the structure of the nocturnal dream. It is not until the period of all-reality emerges that imageries appear in the *wake* life of the infant which resembles the nocturnal dream structure. The hope of psychoanalysts, therefore, that the dream can be used as the fountainhead of the archaic experiences of mankind may have to be set aside. As long as it is probable that the dream is a comparative latecomer in the development of psychic processes, originating in the period of all-reality, the theory of the unconscious itself loses the main justification of its existence.

Pathological effects of mechanical devices. It is interesting to reflect as to how the industrial revolution affects the first universe and what tricky devices man invents to save his energy even in the process of child bearing and rearing. Certainly the old Faustian dream is far off—that of breeding an embryo in a test tube, freeing the mother from the discomforts of pregnancy and the infant from dependency upon another person, giving him complete autonomy with the aid of a mechanical device.

However, there are actually, on a minor scale, time-saving devices, widely used, which present a problem in the first weeks of the infant's life. The baby is often left alone to suck the milk from the bottle, *without aid.*

As long as the baby was breast fed the mother could not separate herself from her own breast, leave the baby, and do some work by herself. She had to stay in closest proximity to the baby, providing him with food as well as with her person, her mothering, a stimulating and at times, an over-stimulating agent.

The replacement of an auxiliary ego, the mother, by an *auxiliary object*, the bottle, cannot be without serious consequences—at least, in a period during which the emotional foundations of learning are being built. The milk bottle tempts many mothers to reduce their own presence in the act of feeding to a minimum and to fix a device which will propel the bottle automatically into the mouth of the baby until his hunger is satisfied.

The tendency to relieve themselves from a time-consuming task is growing, and the phenomenon should be carefully analyzed as to its pros and cons, before it takes more alarming proportions. Sociometric investigators have pointed out that the organic isolation of the embryo is continued for a short period after birth until the emergence of the tele starts the first interpersonal structures. But some infants perpetuate the pattern of organic isolation by social isolation. Indeed, a considerable percentage of individuals show the tendency towards being underchosen or isolated in groups throughout their lifetime; the question is whether the auxiliary ego in the form of the mother has not had, since time immemorial, a deeper function to fulfill than just to be the source of the infant's food. Perhaps our less learned but more intuitive ancestors have done better with their infants than we have, at least in this particular phase which we have described above.

We had occasion before this to point out a similar device of saving energy operating later in the life of the child—the time when the doll has such a paramount rôle in the child's world. The doll, because of its intentional semblance to human beings or humanized animals, represents, in "our culture" at least, a significant function of its sociopathology. Beings who can be loved and hated in excess, and who cannot love or fight back, who can be destroyed without murmur, in other words dolls, are like individuals who have lost all their spontaneity. This *dead-aliveness* of the doll should become an earnest concern to parents and educators, as we are placing it not into a museum, but into the hands of our children. Dolls become their best comrades, memories to which they return in their adolescent fantasies. Toys such as dolls are inanimate objects and the child can create the rôles of master and slave. The toys cannot fight back if and when the child exerts his physical strength by mishandling or destroying the toy. This is contrary to the very principles of democracy. The function of dolls in the early life of children

must undergo a revision. We do not wish to warn against their discrete use. Their reckless application cannot be but harmful. Children get used to "easy" spontaneity. But the difficulty can be surmounted. Our homes and nursery schools should replace many of their doll equipments by auxiliary egos, real individuals, who take the "part" of dolls. The individuals portraying doll rôles and fantastic situations are trained to reduce their own and permit the child a greater amount of spontaneity than in real situations, but behind the doll playing subject, there is a real, feeling person. The child will learn by the auxiliary ego technique what he cannot learn by the doll playing technique—that there are limits to the extremes of love just as well as to the extremes of hate. Leaving the child alone with his dolls is parallel to leaving the baby alone with the bottle, an auxiliary object.

Breach Between Fantasy and Reality Experience

At a certain point in child development, with the beginning of the "second" universe, personality becomes normally divided. Two sets of warming-up process, the one towards reality acts and the other towards fantasy acts, begin to organize themselves. The more deeply engraved these tracks are, the harder it becomes to shift from one to the other on the spur of the moment. The problem is not that of abandoning the fantasy world in favor of the reality world or vice versa, which is practically impossible, but rather to establish means by which the individual can gain full mastery over the situation, living in both tracks, but being able to shift from one to the other. The factor which can secure this mastery for rapid shifting is spontaneity, but obviously not spontaneity as an instinctive factor of which one happens to have more or less available, but as a conscious and constructive principle in building up personality—spontaneity training. Without the function of spontaneity to facilitate the shift, the warming-up process can produce a mental set in one track to the degree that it hampers or harms the relationship of the individual to real situations and real objects, or to imagined situations and imagined objects (as no individual can live permanently in an entirely real world or in an entirely imagined world). The reality function operates by interpolations of resistances which are not introduced by the infant, but which are imposed upon him by other persons, their relationships, by things and distances in space, and by acts and distances in time. The fantasy or psychodramatic function is free of these extra-personal resistances, unless he interpolates his own resistance.

The infant begins to develop two emotional tracks in his universe. They may run independently, never to meet again. The infant would live then in

two dimensions at the same time, the one real, the other unreal, without being disturbed by the division, or it may be that the two tracks, A and B, may from time to time strive towards a reunion, a re-establishment of the original status. These strivings may bring about collisions between the two tracks, produce blocking and bring the flow of spontaneity to inertia. It is the latter which actually happens to human personality. As long as he lives, he tries to merge the original breach and because he remains, in principle, unsuccessful, the human personality, even in its most integrated examples, has a tragic touch of *relative* imperfection. There is this continuous struggle within the individual trying to maintain a balance between these two different routes into which his spontaneity attempts to flow. He is like a man who has two savings accounts and deposits in one such things that he would not or cannot deposit in the other. The deeper significance of this struggle comes from the inability of the infant to continue the uniformity of his first universe, where all the warming-up processes in the rôle-taking were centralized and uniform. However enormous his anxieties and insecurities then were, he did have to separate one part of his self from the other. He may have been non-conscious and weak, but he was, at least, united in living in one world and not in two, since, as we discussed before, the young infant had not yet learned to differentiate the two functions, reality and fantasy. The transition from the first to the second universe (that period when he becomes aware of reality and fantasy) brings about a total change in the sociodynamics in the universe of the infant.

Out of the breach between reality and fantasy, two new sets of rôles emerge. As long as this breach did not exist, all real and fantasy components were merged into one set of rôles, *psychosomatic* rôles. An illustration is the rôle of the eater. But from the division of the universe into real and fictitious phenomena gradually a social world and a fantasy world emerge separated from the psychosomatic world in the matrix of identity. Forms of rôle-playing are now emerging which correlate the infant to persons, things, and goals in an actual setting outside of himself, and to persons, objects and goals which he *imagines* are outside of him. They are called respectively *social rôles* [the parent] and *psychodramatic rôles* [the god].

General Discussion of Spontaneity Theory

The place of the s factor in a universal theory of spontaneity is an important theoretical question. Does the s factor emerge only in the human group or can the s hypothesis be extended within certain limits, to subhuman groups and even to the lower animals, plants and the physical universe?

A type of universe which is *open*, that is, a universe in which some degree of creativity and novelty is continuously possible—and this is apparently the type of universe in which human awareness has arisen—is a favorable condition for the s factor to emerge and to develop. It could not exist in a type of universe which is closed to novelty, i.e., one which is determined by absolute laws. Spontaneity, if placed into such a universe by chance, would rapidly deteriorate because of the impossibility of its growth and disuse of its function. If a subject would know in advance what kind of a situation he is to meet, as to form, place and time, he could prepare himself for it without spontaneity. But if some s would be used by him during the preparation, there would be no proof that it has been operating.

A certain degree of unpredictability of coming events is a premise upon which the idea of the s factor must rest. One can visualize a universe (or rather polyverse or multiverse) which is dominated by chance. One can visualize a universe which is dominated by the s factor reducing the range of chance, and further a universe which adds regularity and order, so-called laws of nature, to chance *and* to spontaneity.

High probability of events as to time, place, and form is not a condition favorable for the development of the s factor. The greater the probability of recurrence of certain events, the smaller is the probability of s emergence. It is rather their non-recurrence which is a favorable condition for the development of s, and which increases the probability that the s factor will emerge in the future. But the non-recurrence of events in itself, i.e., the continued novelty of events, is also not a strict proof that spontaneity is operating. The ever-changing character of events may be the result of pure chance. A test has to be constructed, therefore, which differentiates chance events from spontaneous events, just as it differentiates the repetition of events from novel events.

Another problem is the frequency of the s factor as it becomes manifest in the responses of an individual to situations. One individual may disclose a high frequency of s, another a low frequency of s. If, for instance, a response of an individual to varying unprecedented situations is continuously adequate and effective, compared with the responses of another individual for whom the situations are equally unprecedented, then we can conclude that the s factor operates with greater frequency in the one case than in the other—the premise being always that the individuals tested do not know in advance what kind of a situation may arise and what type of response may be required in order to meet it adequately.

The frequency of the s factor emerging is most unevenly distributed

throughout our lifetime. The human infant, during its first few years of life, is confronted with new experiences and new situations, continuously challenging his responses to a degree unparalleled in other life periods. Our assumption here is that the larger the number of new situations, the greater is the probability that a comparatively large number of new responses will be made by that individual even if we think that it would be impossible for him to be aware of all situations emerging around him and to respond to all new situations in an adequate fashion. But to a certain number of these situations, he must respond. The infant may show any of the four following characteristic expressions of the s factor abundantly:

a) *Dramatic quality* (*newness, freshness, and vivacity*)
b) *Originality*
c) *Appropriateness, competence, skill*
d) *Creativity*

Another aspect of infancy is that the range of new experiences reaching him is quantitatively greater than for the adult, and that is of importance not only for the mentally superior infant, but for every infant. The need to acquire certain basic skills like eating, walking, speaking, etc., stimulates a process of learning in many ways dissimilar to that of the memorized and planned learning of the adult. The child is, in his growth, so closely related to the phenomena in their statu nascendi, that a differentiation between situation and response is artificial. The closeness of the child to the status nascendi of experience keeps him in an atmosphere of spontaneity and creativity, rarely experienced again in later life. The new situations and the intensity with which he can experience them resemble creative acts to such a degree that creating becomes to him a matter of course. Because of this atmosphere of continuous new experiences coming on, to create and to be seems to him the same thing. No event can become stale when so many new events can replace the old ones and promise a world of endlessly oncoming events—a world of pure creativity. He may create as an individual actually very little—most of his acts resembling those of his peers, but the logic of the child in feeling creatively is justified by the *mode* of his experience, its *status nascendi,* rather than by the originality of his experience.

Conclusions

This paper presents a hypothesis regarding the development of the human infant from the situation at birth until he has found the first safe anchorage in the new world. The hypothesis uses ideas like spontaneity, locus nascendi, warming-up process, spontaneous act, act-hunger, rôle-play-

ing, and auxiliary ego in order to construct new concepts such as the matrix of identity and the first universe.

A hypothesis, covering the most mysterious part of human existence and its least articulate phase, is here presented with reservation, awaiting consequent research to prove or disprove it. It offers, however, certain values which are important for a well-constructed hypothesis: (a) simplicity; the "spontaneity-warming-up process and act-hunger" syndrome is the basis of all other formulations. It appears to have an inner consistency and uniformity greater than previous efforts of interpretation; (b) productivity; it is able to interpret heretofore puzzling phenomena of infancy, the "short" intra-uterine existence, the "long" period after birth, infantile amnesia, the origin of image-building, the origin of the dream; (c) it is stimulating further research and (d) it offers the matrix of all-identity as a common root of mental development—in fact, of the entire learning process.

THE DISCOVERY OF THE SPONTANEOUS MAN

With Special Emphasis Upon the Technique of Role Reversal

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INTRODUCTION

In the course of psychodramatic procedures we put the protagonist back on his feet. He is back in the fullness of his natural habitat of space and time. The couch- and chair-protagonist is now free from couch and chair. They are occasional props in an open field of potential persons and objects. He does not lie or sit; he is moving, acting, speaking, as in life itself; at times not committed to anything, neither to move, to do or to speak, but just *to be*. His realm of being may be at times as rigidly structured as the social realities around him, at other times it may have the irreality of a dream or the hallucinatory character of a lunatic world. It may be at times a place for the brutal logic of reality, at other times for the inner logic of fantasy, finally a place for experiences from the "no logic" and "no existence" land. Its spaces may have a room, a street, a sidewalk, a track, a skyrange, all means of ready communication. But it may have

also spatial and temporal structures which do not exist, it is the realm of the "super"-existential. It is the natural habitat of spontaneity, the discovery of the "spontaneous man" (7), the spontaneous-creative nature of existence, of the *Ding "ausser" Sich*. He comes forth not in the form of a smoothly written and sophisticated theory of spontaneity or of existence but in *the full actuality of living*, throwing himself bluntly into the face of an uprooted scientific age. This vehicle into which he enters must be like a suit which is made to order with plenty to spare for the millions of varieties of private and social worlds—the psychodrama.

I. Irreversibility versus Transformation

It is quite ordinary that when you awaken after a dreadful dream, you look for a sobering anchorage in the world of diurnal reality. It is then a deep consolation to find yourself again, that same old person with the same body and mind with which you have identified yourself since you have ever known yourself. Because you find the same existence again, you feel comfortable, secure and relaxed. But there are other times when you awaken and feel bored to find that you are the same person of yesterday to whom you have been tied for ever and ever. It feels then that you are chained to an existence from which you cannot escape. In such moments of utter boredom with yourself you have often wished to awaken in the morning and find yourself transformed into a different existence. It may be a bird, or a butterfly or a woman riding on a white horse, or any other existence which would give you a new experience of the world. But as it is you are stuck with yourself, with this body and this mind, inescapably, to be always the same. In conclusion, let us state plainly a subliminal fact: *individual existence is not reversible*. This irreversibility is a "Daseins Qualitat", a quality of existence.

Is there anything one can do about it? Man has never accepted this dictum standing still. He has challenged and fought it since time immemorial. All religions are a testimony to this protest against being born into a tiny, shabby part of the universe. Think of the folklore of many ancient cultures, of the fairytales which provide man with magic power so that he can be transformed into anything he wishes or anything he may have planned to be, a giant, a saint, a hero or a pig, a dwarf or an insignificant rat. In a scientific age, however, these wonderful gifts of magic thinking have been disposed of wholesale, man has been forced to look into a sobered and reduced reality. But even today, man has not quite accepted this

as an ultimate decision. With every newborn the greatest rebel against the cannon of disillusionment recurs. The "spontaneous subjectivity" of the infant is a terra incognita. His existence and that of the universe are one and the same. There is no other existence outside of him and there is no other existence inside of him. It is all one thing, at least until it is proved otherwise, until the first dreads and barriers to his "all-one" existence come into his path.

I hope the readers of this study will find this seemingly fantastic preamble excusable. It has become a prerequisite of any serious form of psychotherapy that we understand the world in which the patient lives, before we treat it. It is, therefore, a prerequisite that, before we undertake any scientific experiment with children, we try to understand and create for ourselves the atmosphere in which children live in the first three years of life. It is a challenge to construct the kind of philosophy of life children would have if they could produce it. Their inability to produce it alone makes it imperative that we do not indulge in projecting upon them our philosophies and our interpretations of life, but dare to reduce ourselves to a child-like being and think as if we would be one of them.

The child never gives up his expectations to become the center and ruler of the world. He may become humble as he ages and as he learns that the universe has a stubborn structure of its own which he is unable to penetrate and conquer through magic methods. He will play any game —the game of the scientific method or any future improvements on it— as long as it helps by a detour towards the fulfillment of his profound intention to be forever connected with existence, to be all-powerful, immortal, and at least ex post facto to verify at the end of time the words of genesis: "In the beginning was God, the creator of the world," but to reverse the direction* of the arrow from the past to the future, from the God outside of him towards himself.

II. Experimental Psychodrama with Children (1)

Spontaneity is difficult to define but this does not relieve us from asking what its meaning is. An important source of information are the experiences from one's personal, subjective life. I discovered the spontaneous man for the first time at the age of four when I tried to play God, fell and broke my right arm. I discovered him again when at the age of seventeen

* See *The Words of the Father,* J. L. Moreno, Beacon House, 1941 (transl. from the German original, 1920).

I stood before a group of people. I had prepared a speech; it was a good and sensible speech but when I stood before them I realized that I could not say any of the fine and good things I had prepared myself to say. I realized that it would be unfair to the moment and to the people surrounding me not to share the moment with them and not to express myself as the situation and the present needs of the people required. I discovered the spontaneous man again when I began to run role playing and psychodramatic sessions. In the course of thousands of sessions I have run in the last four decades, whenever I worked with groups, I felt that I must work within the *here and now* and that any rehash would not only be unethical but also untruthful and finally, also untherapeutic. It happened many more times but the last time when I discovered the spontaneous man again was when I began to work with our son Jonathan's role reversals.

In order to explore the universe of the child, we have transformed our own home into a theatre of psychodrama. According to my original description of the therapeutic theatre in *Das Stegreiftheater* (1923): "Die Weihebuhne ist das Privathaus. Die Spieler der Weihebuhne sind die Bewohner des Privathauses"; translated "The therapeutic theatre is the private home. The players of the therapeutic theatre are the occupants of the house." Here are father, mother and child, three dramatis personae, J. L., Zerka and Jonathan, who have undertaken an adventurous experiment. The ontology of infant's behavior from the point of view of the infant has never been written because no infant has ever been so precocious as to write his own diary. We thought of overcoming this dilemma by playing all the parts he imagines, so that he may be able to interpret his drama with our aid, he interpreting us as we are playing him, and he interpreting us to himself as he is playing us. As the experiment went on he became gradually astonishingly productive, the central figure of the experiment, a protagonist-scientist participating in a research project in which he was not only one of the three producers of the design, but the chief interpreter of the data. The methods used were *sociometric* and *psychodramatic*, applied directly to the situations in which the protagonist lived. We must emphasize here that they had nothing to do with "therapeutic intervention". There was never an incident which he may not have outgrown, using his own devices and with the humdrum assistance of ordinary parents living in a typical modern house. The experiments done by Jonathan and ourselves were for the "sheer fun" of it. We hoped that psychodrama would make our home-life richer and more adventurous; and this it has done. Then we hoped

to learn what methods the child uses spontaneously to socialize himself and how we can aid him in this enterprise.

Let us visualize first the layout of the house and its metric picture. (See Locogram I.) The physical distance between the *key* places have to be noted, for instance, from the bedroom of the parents to the bedroom of the child. Are they on the same floor or must the child climb stairs? The distance from the bedroom of the child to the place where his *toys* are is another factor. The child gets up in the morning and decides where to go, to his parents' room or to his toys. Does he go to the place which provides the greatest attraction for him or to the place which is nearest? Another feature is the physical distance between his room and that of the nurse. The nurse may be nearby but the child may prefer to climb down the stairs, which is a more difficult task, in order to get to his mother. The physical distance to the kitchen, the physical distance to the door which leads to the lawn or the street are other features. In a particular home, and in the case of a particular child, as in this one, there may be special features of attraction, for instance, a large mirror or a little dog or a window in the kitchen he looks through every morning to see birds and squirrels playing. Getting up in the morning one child may show great satisfaction in moving around in physical space and playing with his toys. Another child may be restless until he finds people, he looks for people first; he moves straight into his parents' bedroom. (This is similar to the first step in classic psychodrama: we let the protagonist take us into his house, showing us around the kitchen, the basement, the pictures and the books, before we see him acting in relationship to people.) Other features are where the beds of the various occupants of the house are located, how the family is seated during a meal around the table, how much freedom of movement and action the child has in the house. Can he enter every room of the house at all times or are certain rooms locked?

In the drama which we played, we lived through the normal situations as they presented themselves from day to day, getting up in the morning, eating, working, going to sleep, first intervening with psychodramatic methods only from time to time, when it seemed rewarding, finally making them a daily routine. The episodes which are reported here are selected from a large number and refer to a particular period of Jonathan's life, from twenty-four to thirty-six months. We thought that such a report may gain in clarity if presented subjectively, in reference to a particular child, to our own son. But some of the hypotheses here produced have been formu-

lated by us in the course of years, thanks to the observations made with a large group of children, long before this particular occasion emerged.

Every child has a wonderdrug at his disposal, prescribed to him by nature itself,

Megalomania "Normalis"

Dosim Repetatur.

The centrality of man's outlook, his self-reference, that is, reference to his "matrix of identity" (1) never ceases to operate. He remains a child as long as he lives. "Residual" megalomania is a normal function.

It was amusing to watch the quasi-megalomanic behavior of Jonathan whenever he encountered events which amazed and challenged him. He was impressed by any big and moving thing, inside or around the house, a dog, a cat, a bird, a horse, a truck or car, a tractor or airplane. Returning to the house he would try to play the part of a dog, a cat, a bird, or any animal which he had just encountered on the lawn. He did this often with a great deal of preparation, consciously, and asking his mother or father for help in doing it. He tried to play the dog or the cat as concretely as possible. He would stretch out his tongue, trying to catch some food from the floor and swallow it, repeating it many times patiently. He would make the sounds of a dog or a cat and ask his mother and father to walk on all fours and share in the action with him, to feed him like a dog and to stroke and caress him like a pet. As we were doing it with him and trying to act like a dog or a cat, we began to understand what Jonathan was after: *he was trying to come closer and closer to the thing "dog" and possibly turn into one.*

III. Technology

In the course of the psychodramatic work with him, Jonathan confirmed our interpretation. By playing the part of a dog or a cat it is as if he tries to understand them, to communicate with them, taking them unto himself. Children use this method intuitively. When it is consciously and systematically used for the purpose of training, it is called "role" playing (2). *Playing a role is the personification of other forms of existence through the medium of play.* It is a *specialized* form of play, although the word playing is often accompanied by misleading connotations, reduced to the adult's interpretation of it.

Role playing was the fundamental technique in the Viennese Spontaneity Theater. Because of the dominant role which spontaneity and crea-

tivity have in role playing it was called *spontaneous-creative* role playing. It consists in placing the individuals (the actors), in various situations—*alien* to the situation in which they live—and in various roles—*alien* to their self and its private roles. These situations ranged from entirely unstructured to maximally structured situations. The less structured they were, the greater was the demand upon the spontaneity and creativity of the actors.

"Role" playing can be used as a technique of exploration and expansion of the self into an unknown universe. It is probably for the child the method par excellence to encounter and, if possible, to solve a situation which puzzles him. It may become for him also a rehearsal for life, preparing him to meet any expected or unexpected situation of the future, but all these signs are not quite clear to himself. First it may be amazement and wonderment which make him try to be as strange and big as these cats and dogs are, to take them unto himself and himself unto them. It is fear of any existence which is not connected with his existence; it is dread and expectancy of this rather than that of any actual event. As an infant he was the entire cosmos or, at least, he did not know otherwise. He did not know that some parts were outside of him. But now, since he has found out that falling hurts, that objects in space are sharp and hard and have to be avoided, that sounds can be loud and shrill and strange, that there are innumerable individuals and objects outside of his little body, spread out wherever he goes, he has developed a sort of hunger for taking them all unto himself, something like a *"cosmic hunger"*. He is trying to conquer piecemeal all the loving and threatening parts of the universe which originally belonged to him, in an effort to restore his identity and equilibrium with them, a sort of "cosmotasis".

He tried the power of roleplaying first with his mother and father. He sees his mother in the bathroom, looking into the mirror, putting lipstick and powder on. He will try to do the same; when he is blocked from doing it he is deeply hurt, bewildered, because for him this is not just what is interpreted as imitation, as a playful demeanor, it is rather an effort to enter into his mother and take her unto himself. Or he sees his father shaving his beard, or using a telephone. He will try to do the same thing, however incompetently. He may tear the telephone out of his father's hand and use it. He sees his father receiving mail, he wants to receive mail too, in the morning, and will look seriously from one letter to another, opening and reading them. After the period of playing the roles of the parents and

other adults in the house was over and he had attained considerable skill, we introduced another particularly rewarding method, *the technique of role reversal* (3). The idea underlying role reversal is still little understood. First let us try to separate roleplaying from role reversal. If an individual takes the part of a doctor, a policeman or a salesman, the part of his father or of his mother in order to "learn" how to function in these roles, that is roleplaying. But if he and his father or his mother "change" parts, the father becoming the son and the son the father, this is role reversal. In proper role reversal two individuals A and B are bodily present; A takes the part of B and B takes the part of A. A is the real A and B is the real B; for instance, in role reversal of husband and wife, father and son. But after the act of reversal is completed A moves back into "A" and B back into "B", that is, the "role return" to the primary self. "Falling out of the role reversal" or "falling out of the role return" is a frequent occurrence. Existential role reversal is not possible. The nearest thing to it is psychodramatic role reversal which is for children and certain types of psychotics as good as real. *Role reversal is a technique of socialization and self integration.*

A technique of role reversal can be used effectively with infants and children. They may be encouraged to reverse roles with their fathers, mothers and other individuals around them whenever "indicated". Role reversal is like a two-way roleplaying. Jonathan found to his great delight that he can reverse roles and do what father and mother do, and that they can do and what he does. His performance has many of the characteristics of a "psychodramatic shortcut".* It gave him pleasure that they took him into themselves as he took them into himself, and when they took his part he often corrected them if they did not act his part well enough. It was like getting even with them. The reversal of roles seemed like a method more sophisticated than roleplaying, one by means of which he could now return the whole cosmos unto himself, regain the "paradise lost". At times it was like a new game; but gradually he discovered that by reversing roles he could accomplish a better understanding of other individuals and perhaps to learn to love and control them. *Reversing of roles with all the individuals and objects of one's social universe seems to be, at least theoretically, an indispensable requirement for the establishment of a psychodramatic community.*

* See "Psychodrama and Mental Catharsis", *Sociometry*, Vol. 3, 1940.

IV. Illustrations (4)

The technique of role reversal has been applied to a number of situations: feeding and weaning; toilet training; eating; sleeping; helping others; social discipline; handling of aggression and opposition; accident proneness; sex education. Herewith follow a few illustrations of a number of episodes:

Role reversal as a corrective for "unsocial" behavior. Daddy is sleeping in the bedroom. Jonathan says to his mother: "I'm tired, I want to sleep there", pointing at the room in which his father is sleeping. Jonathan is very insistent. Role reversal is used on the spot, his mother primes him by taking the part of Jonathan: "Let me go in, Mummy, I want to sleep there!" "No," says Jonathan, taking the part of Mummy: "No, Jonathan, you can't, Daddy is sleeping." He is quite determined about it. Mother as Jonathan insists: "But I want to go and sleep there *now*." "But you can't go in, you will disturb Daddy." When this role reversal was completed he immediately returned to being himself, dropped the situation and permitted his father to sleep undisturbed. It is of importance that the auxiliary egos do not over-do a situation, either in terms of overacting or in terms of overstressing and carrying on too long. The child's "own indications" as to when a situation has ended for him is the cue for the adult to follow suit. Many of Jonathan's blurred social perceptions were clarified through the role reversal.

Role reversal as a correction of general rebelliousness. He had for a while the tendency to take the attitude of opposition towards anything and anybody. Jonathan said "No, No" to this and to that, even when he at times meant to say "yes". His mother took the part of Jonathan, reversing roles with him, saying "no, no" to this and to that. Jonathan, in the role of his mother looked at her perplexed and asked: "What are you saying 'No' for, Jonathan?" When he became Jonathan again he began to say "yes" instead of being negative or neutral. Role reversal appeared to be an effective way of learning to be positive and not moody and wishy-washy. Two applications of this form of role reversal made it possible for him to see himself and to evaluate this behavior as rather useless; at any rate it has not recurred, even under fairly stressful circumstances.

Role reversal as a teaching and learning technique, to find out and become informed about things. Jonathan and his mother are in the car. Mother is driving and toots her horn. Jonathan asks: "What do you hoot

your horn for, Mummy?" Mother explains the reason to him, then he himself suggests: "You be Jonathan and ask me 'Mummy, why did you use your horn?' " His mother now takes his part and asks him the question. In her role he replies: "Don't you see the three boys on the bicycles, Jonathan? I toot because I want to warn them that I am coming behind them, so that they won't be hurt by the car." He is very emphatic about it, shakes his head and uses his hands to explain. The hypothesis is demonstrated here that a child would learn better, not only if he hears what mother says, but takes her part, acting like her and explaining what she explains.

A three-way role reversal between father, mother and child, the treatment of a three-way temper tantrum. The father is having a long distance telephone conversation. During this call Jonathan talks loud and pushes chairs around the room. Daddy gets mad because he cannot hear properly, it is an important telephone conversation. Mother takes sides with Jonathan because he is small and does not know any better; she thinks that Dad could have made the telephone call from the office. Now Daddy gets mad at her. He tries to continue his telephone conversation at all costs, asking Mother to remove Jonathan from the room. He shouts: "It is an important call, can't you keep the child quiet or get him out of the room?" Then Mummy gets mad at Daddy and begins to shout back. Jonathan is now frightened and begins to cry and is taken out of the room by Mother. After a few minutes Jonathan asks his mother: "Why was Daddy mad?" Mother explains it to Jonathan. Later on a role reversal situation was worked out. Jonathan takes the part of his father trying to put through a long distance telephone call. Father, now in the part of Jonathan pushes chairs around and shouts. Jonathan gets upset and says: "Let me talk, Jonathan, don't make so much noise." Now mother gets mad at Daddy. When Jonathan returns to his own role he says to his mother: "Let Daddy make his telephone call, I won't shout now." Daddy now takes the part of Jonathan's mother and finally Jonathan reverses roles with his mother, so that each has taken the part of every other in the situation which had produced an unpleasant scene.

The three-way locus and the three-way role reversal in the bed situation. In the three-in-bed situation, there are three positions in which the son can be. The first is the *middle* locus, the son between his parents; the second is the *outside* position, the mother is in the middle; the third is the other outside position, the father is in the middle.

The middle locus has been found to be most popular with sons, in

a small sample which we have surveyed. He has both his mother and father next to him on both sides. The outside locus is the next in preference, i.e., when his mother is in the middle and he's next to his mother on the outside. The least wanted situation is when his father is in the middle and he is on the outside, next to his father. The question is why the middle locus is most wanted by the son. Is it because he is attracted equally to both of them and because he needs them both? Loci are related to status. It may be that the middle locus provides him with a status of the greatest possible security, being flanked on both sides by those figures whom he has found to be the most reliable figures of protection. But locus is also related to the role an occupant plays. It may be the role of the lover which is is here satisfied, being *nearest* to the two persons he loves most, his mother and father, and who love him most. That seemed to be the entire explanation but the fact that he prefers the middle locus of his mother to the middle locus of his father threw new light upon the problem.

In the middle position he is able to keep his father away from his mother or at least, from being as near to his mother as *he* is. Further, he is there also in the position of the "master", the one who controls both sides. He can prevent intimacies between the two parents, but he may have intimacies with each of them separately without interference. It is immaterial at this point whether we classify this relationship as psychosexual or not. The dynamics of proximity involve more factors than sex.

Jonathan prefers to reverse roles with his mother. "I am Mommy now and you are Jonathan." Only one out of nine times does he reverse roles spontaneously with his father, "I am Daddy now." The question comes up why he prefers reversal with his mother as compared to reversal with his father. There are several reasons which could be marshalled here: 1) His mother has been his original protective figure since he was born. She breast fed him for a while and was at his beck and call up to the time when these experiments began. Nurses came and left but she always remained. In the early months—up to about 3 years—the role of the father was not quite clear to him. In one of the episodes he thought of his father as a protective figure for his mother, rather than himself. Father was more of a marginal agent in the sociogram. 2) His mother was his "double" during the first few weeks of life. According to psychodramatic theory here is a "symbiotic" relationship between mother and infant, a "matrix of identity" (1). It is easier for children to reverse roles with their former doubles, for instance, with their mothers, than with their fathers and comparative

strangers. 3) All reversal is incomplete. A certain part of the ego during reversal is either free to observe or to fill it with a different role. With one part of himself then, he becomes his mother and acts like her, with the other part which is unrehearsed and unused, he is still Jonathan, a little male. Jonathan then could make love to his mother, that is within his own self, playing the part of his mother and his own at the same time, a sort of ambivalent role reversal. 4) Jonathan prefers to reverse roles with his mother although he could reach a more complete reversal with his father, because of their sexual resemblance as males. But the physical configuration of the person with whom he reverses roles is secondary. The chief factor is apparently the *person* and not the sexuality of that person. 5) In order to test this hypothesis a series of trials were made using the role reversal technique. Where the Oedipus situation existed it existed because of rigid maintenance of roles and locus of parents and children. The pattern of behavior could be reduced or broken. The scoring of preference for mother-proximity in the bed-situation was reduced after forty-five role reversal trials from 9:1 to 2:1.

Jonathan as a Philosopher of Universal Transformation. Jonathan and I (Daddy) were resting in bed. We were alone. Jonathan was in the middle position in bed. "I am Mummy now", he said, "and you are Daddy". Suddenly he turned to me (in the role of Mummy) and asked: "Has Jonathan a 'pipi'?" "I think so," I said, "but ask him yourself." When his mother came into the room he addressed her as Jonathan and repeated the question: "Jonathan, do you have this?", pointing at his penis. "Yes", she says, "I have. Do you have it, Mummy?" she asked him. "Yes," he said (as mother). "Do you have it?" she asked him again. "No," he answered this time, "that's yours, I'm a girl." He looked at his penis and laughed. He changed into a girl but had a penis just the same. A woman can change into a man, have a penis and still remain a woman, possessing the body of a woman. Transformation is possible, *Quot Erat Demonstrandum.* He had applied the creed of universal transformation like a primitive animistic philosopher might have done thousands of years ago. The philosophy of universal transformation, the change of one organism into another, is deeply rooted in the imagination of infants from the time they begin to take a direct look at the world.

Jonathan as an Ethnic Anthropologist. Jonathan said to a colored waiter: "I want to be a black man. Do you want to be me?" Thus they reversed roles. Shortly afterwards Jonathan said: "I'd like to have a Jona-

than." When asked what kind of a Jonathan he replied: "A black Jonathan." Here he took the role of a mother who has a colored baby. In doing this he went through a chain of transformations, becoming first a male Negro, turning then into a mother Negro, who has a Negro baby.

Jonathan Turns into a Little Baby. "I'm a little baby", Jonathan said. He had the intention of going upstairs to the second floor, and wanted to be carried. And so he said, "You're Mummy now" and looked at her with bright eyes, "carry me, Mummy". "Oh," said his Mummy with a twinkle, "you be Mummy and I'll be Jonathan", whereupon they reversed roles. Said she as Jonathan "Carry me, Mummy". Answered Jonathan as Mummy: "You are a big boy now and very heavy. Walk up the steps by yourself." Then they reversed roles again and he walked proudly upstairs without any assistance.

Jonathan uses role reversal to bolster his ego. While sitting at the table, he could not cut his meat. The piece was too large for him, but he was unwilling to admit his inability to handle a knife. He turned to his mother quietly, assuming her role and asked: "Would you cut my meat for me, Jonathan?" Thus Jonathan, as played by his mother, cut the meat for him without any loss of his self-esteem. It would have been a depreciation of his ego to admit officially that he is too inept to cut the meat. "Jonathan can do everything." This is an illustration of an advanced form of role reversal in child training; instead of the adult intervening for the child, he is a child and intervenes for the adult.

Role reversal to assume the role of authority, not in order to be helped but to correct certain unfair behavior which he observes in his father or mother. For instance, he was annoyed by his mother insisting that he should eat even when he claimed he was not hungry, or that he should finish the meal with them although he had enough. In role reversal he took the part of his mother and said to her in the role of Jonathan: "Eat, eat everything on your plate. You can't leave the table yet because you are not through." When he returned to his own seat, becoming himself, his mother who had again become herself said quietly: "'Eat only as much as you want, Jonathan, and when you are through you can leave the table." Here Jonathan is not only his own therapist but that of his adults as well.

Role reversal as a training in resignation and restraint. This situation demonstrates the seriousness with which he takes role reversal. Jonathan is sitting in the restaurant, eating his favorite flavor of ice cream. His mother sits next to him. Mother says: "I'm Jonathan now and you are Mummy.

Can I have my ice cream, please?" "Yes", replied Jonathan and immediately pushes his dish with ice cream over to his mother without batting an eyelid. Mother as Jonathan begins to eat it. He accepts the situation with dignity, it is all part of the game.

Refusal of role reversal. One of his great pleasures is after supper to go bye-bye in the car, possibly to a place where he can get ice cream, to a bazaar, to toyland. When it was not possible for us to take this trip one evening, his mother wanted to reverse roles with him in order to warm him up to staying home. Jonathan refused, saying: "Don't be me. I'm Jonathan now, you be Mummy." At times the best medicine does not work. Another illustration is: After he had been busy puttering around the house in the role of the handyman, he was taken to bed. His mother tucked him in and said: "What will you repair now, Mr. Ahearn?" He put his thumb in his mouth and replied: "I'm not Mr. Ahearn now, I'm Jonathan now, going to bed."

The double technique. A new development is one in which Jonathan now directs his mother to take his part: "You be Jonathan and I'll be Jonathan, two Jonathans", or as a half-way role reversal and also a complete double: "You are Mummy and I'm Mummy too, two Mummies." This is evidence of the close tie existing between the double and role reversal techniques.

A control study. The nearest thing to a "control" study was possible when Andy, a playmate of about the same age as Jonathan, entered the situation. Role reversal is based on an old household remedy for unruly children: if child A hits child B, then it is customary that child A gets hit back with the same weapon so that he learns how it feels, and to prevent him from hitting child B at a future occasion. It is a kind of curing by retaliation. The retaliation is usually carried out by a parent or older person. The difficulty is that child A who is hit back considers this an act of aggression by a outsider and frequently responds with feelings of resentment and fear that he is no longer loved. The results are divided, some parents report good results with this technique, others report failures. The problem is obviously how to eliminate the outside aggressor and still to obtain the effect of how it feels to be hit. This aim is achieved by the role reversal technique. Instead of child A being hit back by an outside person or by B, he is hit back by himself, i.e., by reversing roles he becomes B and B who is now A, hits him.

It became necessary to have some proof that it is role reversal which

produces a change. Therefore, a kind of control study was attempted. We set up a situation 1 to which the role reversal treatment was applied and then we matched a comparable one, situation 2, to which no reversal treatment was applied. In situation 3, role reversal was applied to the alternate child.

The situation chosen for the control was the following: Both Jonathan and Andy want to ride a bicycle. There is only one bicycle available. A big fight ensues. Every time this occurs they have to be separated.

We instructed the nurse to call us to the scene the next time a fight over the bicycle arose. When we arrived, Jonathan was about to start riding the bike, Andy cried and wanted to stop him. Jonathan appeared to be having the upper hand. At this point we intervened: "You Jonathan, are Andy, and Andy, you are now Jonathan." Then we addressed ourselves to Andy in Jonathan's role: "Do you want to ride the bike, Jonathan?" "Yes" he replied, "I do." Then he looked at Jonathan who was now Andy on the bicycle. Now Jonathan, respectively Andy, immediately stepped down from the bike and Andy as Jonathan, stepped upon it. For the rest of the period of about one half hour Jonathan permitted Andy to ride the bike. We immediately left the playground in order not to influence their interaction but it all worked out well.

The next day we constructed situation 2 which was a match to situation 1, with the exception that *no* role reversal treatment was applied. It was the same time of day, both children were present with the same nurse. Jonathan steps upon the bike and tries to ride it. Andy tries to stop him. A fight ensues, shouting and crying. According to instructions no one interfered as we wanted to find out if they could resolve the problem themselves. The situation, however, remains unsolved. Jonathan is on the bike, Andy holds on to the wheels so that it cannot move.

On the third day situation 3 was observed. Andy has arrived earlier than Jonathan. He immediately steps upon the bike. Jonathan comes and tries to push him off. In the midst of the fight we come out and attempt the role reversal treatment. Andy becomes Jonathan; Jonathan becomes Andy; and this time it is Andy in the role of Jonathan who steps down immediately and Jonathan as Andy steps upon it. Situation 3 simply confirms that resolution of such a conflict is facilitated by role reversal treatment.

Roleplaying and actual situations. At times Jonathan used role reversal as a subtle technique for getting his way; for instance, his mother

was typing. He stepped forward and said with determination: "I want to type, Mummy." When he found that there was no compliance with his wish he reversed roles and said: "I am Mummy now and you are me", expecting that now he will be able to use the typewriter by stepping into his mother's shoes. This strategy of Jonathan reminds me of one of my earliest observations which led to the rediscovery of the spontaneous actor. I noticed that when, for instance, the role of Hamlet was played in a professional theatre, there were a great many irregularities in the performance. "Behind the mask of Hamlet lurks the private personality of the actor" and a conflict between the role and the private person ensued which produced these irregularities ("the role-person conflict") (5). This conflict is particularly evident in the professional actor who is continuously compelled to restrain and repress "the spontaneous" within him, his private, real person, to a maximum, in order to portray the theatrical roles adequately ("histrionic neurosis") (6). This observation led to the spontaneous roleplayer of the psychodrama. But even within psychodramatic productions there are scenes which seem more real than others, especially if the improvised situations are influenced by the conductor. Then a conflict emerges between the real problems a protagonist has *at the moment* and the situations which he plays. It is often difficult to separate the roleplaying portions from the actual portions of a psychodrama. But there have been numerous occasions when the difference between the roleplaying and the really meant action came forth dramatically and unmistakenly. For instance, in the session of a matrimonial psychodrama the husband suddenly revealed in the presence of his wife who was sitting in the audience that he is in love with another woman and that he had a dinner appointment with her for the next evening. A secret was suddenly out; the wife was taken by surprise and burst out into hysterical tears. All attempts at roleplaying strategies and therapy were given up and nothing was left for a few minutes except a tense encounter between two people whose relationship had come to a decisive crossroad (7). The question is how to translate these clinical discoveries into a meaningful research technique—a challenge to the laboratory-psychodramatist.

V. Critical Moments in the Social Development of the Child

Reversing roles with father and mother, sister and nurse, caretaker and secretary, and other members of the household developed smoothly. The first serious dilemma emerged when he wanted one day to reverse roles with

Bumpy, a dog, who had been a "friend" on the premises. He felt very comfortable and at ease with Bumpy but when he tried to play Bumpy's part in his own presence, Bumpy joined in, barking and running with him along the fence. That is how far he got with the dog. He looked at us; he had come to his first crisis in the use of role reversal. He discovered that he could not reverse roles with dogs, cats, squirrels, birds; that role reversal can be accomplished only with certain people, that there is a limitation to this technique. In order to console him we applied the technique of the auxiliary ego; his mother went behind the dog and spoke as if she were the voice of Bumpy: "I understand what you want, Jonathan, you want me to be you and you want to be me, but that is difficult. I can not do it, and I may never learn to do it." Jonathan then patted him and said: "You are a nice dog" and the mother's voice came back: "I like you when you pat me, when you are gentle with me. Whenever you want something from me, you tell me and I will try to do my best, but don't expect anything from me which is beyond my natural capacities." Jonathan came back into the house and after a few minutes of thoughtful silence he said: "Bumpy is a nice dog, don't you think so, Mummy?"

A child between two or three may not be able to understand when a parent says to him: "You shouldn't do that. Don't hit the dog. Don't run after the cat. You frighten her." Such words are often meaningless and remain without impression. We have to remember that the child has his memory in the act and not in his memory (1). Rapid forgetting of incidents is a natural condition, but he can be taught "in the act" if the bitter pill, so to speak, is placed in the envelope of action. Thus, when he acts he will also retain the pill. If an indication for psychodrama arises the mother may go behind the dog and say: "It hurts me when you kick me" or back of a running cat: "Meow, you frighten me when you run after me" or she will use it as a preventive method. When she sees the child hitting a doll which represents a dog or a cat, she will role play in behalf of the doll, taking its part and later reversing roles with the child, so that he learns how it feels to be a doll which is hit by a child. All this is good action teaching. The question may be raised as to the potential risk of "auxiliary animation". One may argue that it indoctrinates and fixes the child on a level of animistic thinking, encouraging regressive and infantile behavior. The answer here is that we should not let adult interpretations interfere with what is the actual, spontaneous level of the child's feeling, thinking, perception during a given period of his growth. He may be unable yet to accept the

world around him as it is, within the reality context of the adult. He may, however, need more explanation in order to counter the "dread of nothingness." The answer is, therefore, to create methods which fit the child's needs and not what the adult thinks he needs.

His fear of large black dogs, crows, or any strange animals which suddenly appear from nowhere, is still with him. Auxiliary ego training has been unable to remove this fear entirely. All efforts at desensitizing seem to have been relatively fruitless. There appears to be a *"residual"* anxiety which seems to accumulate and feed that fear. The impossibility of reversing roles with animals presents an unsurmountable barrier to his cosmic joy.

The next crisis came to a head when he began to pay intensive attention to our carpet sweeper. His mother used the carpet sweeper to clean the rugs in the house. He did not like it and was frightened by that strange unnatural noise which came from it. The whole household was paralyzed when it was in action. Nobody could speak or hear anything. He was opposed to it and wanted this strange monster to stop. He ran out of the room crying, but returned to protest. He tried to kick it. His mother stopped in order to appease him but that was not a solution to his problem. We started a session, he immediately tried to play the role of a carpet sweeper and then to reverse roles with it. But he discovered the tragic fact that in our world a man can not reverse roles with a carpet sweeper. He took this setback far harder than the one with Bumpy. When Bumpy barked or cracked a bone it seemed so much more real to him; but Jonathan could not imitate the carpet sweeper as easily, although this was easier for him than it was for the carpet sweeper to imitate Jonathan. In his encounter with the carpet sweeper the child was faced with the old totemistic enemy of man, perhaps the greatest enemy man has ever encountered. The carpet sweeper was a symbol for a special order of beings, for all automatons which fill our technical world, the gadgets and machines which man has invented and which are becoming more powerful than he himself. He learned to use an electric switch and so control and subordinate the carpet sweeper. But even then his anxiety persisted for a while, and after the anxiety was gone, he did not seem quite satisfied with the result. It was not sheer power he wanted. He would have been more satisfied to find that the carpet sweeper was a being like himself, which he could understand and love.

A third order of being came Jonathan's way and with them another halt to his role reversal practice. It happened to him first at Christmas

time when he met Santa Claus. When he saw Santa Claus, although he spoke gently to him and brought him gifts and promised him more, the strange mask, the white beard and unusual costume made him feel uneasy. He could not be consoled. He seemed to be so far away to him, unlike his father and mother and so different from Bumpy. He understood later that Santa was a symbol and not a real existence. He was unhuman like the electric carpet sweeper, but still less concrete and his unreality frightened him. Like all superhuman ideas and symbols they were so far above him that he did not dare to look at them. It was the same with angels and devils and the mysterious beings of fairy tales. When he heard later how the world was created, and of God and Heaven, angels and devils, he felt an indescribable awe. He had learned to use an electric switch to control the carpet sweeper but he did not know of any switch or vehicle by means of which he could become familiar with superhuman beings or to stop them from acting. He could not reverse roles with them. The only alternative seemed to be for Jonathan to personify Santa Claus (technique of realization). The thought was that by acting and speaking like Santa Claus he may lose his fear of him.

Role reversal research has brought to our attention three critical stages in the social growth of the child: 1) The relationship to inferior, subhuman beings like animals, birds, fishes, reptiles, or insects. 2) The relation to objects: a) inanimate things like stones, water, color, light, etc.; b) man-created things like machines and robots. 3) Relationship to superior and powerful beings: a) his parents, adults, strangers, etc.; b) ideal beings like Santa Claus, demons, angels and God. Jonathan discovered that he could play the part of dogs, cats or birds, but that he could *not* reverse roles with them. He discovered that it was more difficult still to play the part of an object or a machine, and that it was impossible to reverse roles with them. The only solution he saw was to subordinate and control them. The greatest mystery were the "ideal" beings. He could play and reverse roles with his parents but the superior beings were hard to reach; he could not communicate with them. The only alternative he found was the process of realization, to become Santa Claus or to personify God.

It is not necessary for the little child to turn metaphysical in order to believe in transformation. For him the entire universe is alive. Using the technique of role reversal the "phenomena" turn easily into "noumena."

VI. Origins of Anxiety and the "Transformation Hunger" in Schizophrenia

Anxiety is cosmic; fear is situational. Anxiety is provoked by a cosmic hunger to maintain identity with the entire universe (perhaps to restore the original identity of the infant in the matrix of identity). This cosmic hunger manifests itself in a) "retrojection", drawing and receiving from other organisms signals, ideas or feelings, to add strength to the self (expansion) or to find identity with himself (confirmation); or b) dread of all organisms with whom he cannot co-act and share existence; psychodramatically speaking, with whom he cannot reverse roles. These dreads are provoked by his desire to be transformed into them as his only definite assurance of having identity. The cosmic hunger of the child strives towards "world" realization. Self realization is only a stage in-between.

I often heard schizophrenic patients in a psychodramatic situation say: "I want to be a chair, a tree, a dog, or, I want to be God." They declare that the chair *talks* to them and that it is alive. The explanation for the transformation hunger may be that they want to change into the things which *talk* to them or communicate with them in other ways. If a chair talks to him he wants to become a chair; if a dog talks to him he wants to become a dog. In extreme cases he will try to play the part of a dog in all earnestness. If God talks to him he may try to become God.

VII. The Significance of Roleplaying Techniques in Preliterate Societies

Future anthropologists will give to the animistic and totemistic philosophers of past cultures a high place of honor. By accepting animation and transformation as productive realities and not as "techniques" and applying them as explanatory principles for the behavior of all organisms they gave the universe of their time a unity and totality of meaning which is flagrantly missing in our modern world-civilizations. By naively accepting the first philosophy of the child with its love for animation and personification they may have succeeded to make their world safe for children and lunatics. It was the destiny of the scientific mind to destroy magic beliefs and to pay with a loss of spontaneity, imagination and a divided philosophy of life. But the cycle will repeat itself although we cannot return to the magic world of our ancestry. We will produce a new magic on a new level. Science itself will lead us to it. Man's imagination will not quit the eternal child in him. It will find new ways to fill the universe with fantastic

beings even if he has to create them. We are probably in the midst of this development. This is the meaning of automatons. Science fiction is but one illustration, Walt Disney's fabulous world of animated characters is another; it is the use of auxiliary egos on the level of motion pictures. The auxiliary ego technique itself is a form of primitive "psycho"-animism. The techniques of the animistic philosopher rejected by analytic anthropologists as infantile magic is returning on the therapeutic level and has been made productive in psychodrama. It is the return of magic methods of the early cultures in a scientific age in behalf of new objectives.

VIII. Hypotheses

1. Role reversal increases the strength and stability of the child's ego; ego is here defined as identity with himself.

2. Role reversal tends to diminish the *dependency* of the child upon the parent; but it tends also to increase his ability to *dominate* her or him because of having gained a profound knowledge of her or him—through inside information.

3. Frequent role reversal of the child with individuals superior to him in age and experience increases his sensitivity for an inner life more complex than himself. In order to keep up with them on their internal role level, which is far above the overt level of the role, he has to be resourceful. He becomes prematurely skilled in the management of interpersonal relations.

4. The excess desire to reverse roles with mother is due to an early appreciation and perception of her roles. Frequency of role reversal with father increases as the perception of father's role becomes clearer to the child.

5. The technique of role reversal is the more effective the nearer in psychological, social and ethnic proximity the two individuals are: mother-child, father-son, husband-wife.

6. Role reversal is an effective technique for the purpose of socializing one ethnic group to the other. The greater the "ethnic distance" between two social groups is, the more difficult is the application of role reversal to them.

7. The empathy of individuals or representatives of groups for the internal experiences of other individuals or representatives of groups—what they feel, think, perceive and do—increases with the reciprocal perception of the roles in which they operate. Therefore, the training of auxiliary

egos and doubles as well as of psychotherapists in general is in the direction of increasing their sensitivity.

8. The empathy of therapists increases with their training in role perception and role reversal.

9. Role reversal is without risk the more solidly structured the two persons are who reverse roles.

10. Role reversal is a greater risk, at times contraindicated, if the ego of one person is minimally structured and the ego of the other maximally structured. An illustration of this is the treatment of psychotic patients. Psychotic patients like to play the part of authorities, nurses, doctors, policemen, or of ideal persons, for instance they like to play God, but when faced with an actual person who embodies authority they resent interaction and role reversal.

11. Role perception is a function of role reversal.

12. Role reversal is indispensable for the exploration of interpersonal relations and small group research.

13. Every parent is a natural but untrained auxiliary ego. To be an effective auxiliary ego to one's own child every parent needs professional training. Auxiliary ego technique should be applied when there is a clear indication for it. For instance, a parent complains that his child has the tendency to throw stones at dogs and cats, or to hit them. The therapist must realize that the day may come when he will throw stones at another child or a grown up.

14. If auxiliary ego animation is done to excess it may excite the child unnecessarily. It may not always be indicated to animate every object or animal surrounding a child.

15. The memory of the child is in his act, not in his memory. The act hunger of the child causes his memory to be shortlived. The acts follow one another so swiftly that the memory spans between them are short.

16. The shorter the memory span, the greater the frequency of starts and every start requires some spontaneous fuel in order to emerge. This explains the apparently uninterrupted spontaneity of children. In lieu of memory they have spontaneity (8).

17. Hunger for expression is act hunger before it is word hunger.

18. The infant is so immersed in the act that he has no memory of it after it has been consummated. As the intensity of the act hunger syndrome decreases, the ageing of the child increases.

19. The techniques of *transformation, subordination* and *realization*

have been used in many magic rites of ancestral cultures in order to encounter the various threats of nature or to explain its activities. Our children too, before they grow up and are able to understand the methods of an adult world, have a natural need to use the methods described above.

20. Double technique is the most important therapy for lonely people, therefore important for isolated, rejected children. A lonely child, like a schizophrenic patient, may never be able to do a role reversal but he will accept a double.

21. Positive correlation should be found between sociometric status of the co-living individuals and the volume of role reversal applied to them; the sociometric status of an individual increases in proportion as role reversal is applied to all the participant individuals of the group. (The sociometric status of an individual is defined by the quantitative index of choices, rejections and indifferences received in the particular group studied.)

22. Accident proneness is a function of the sociometric status of an individual. As the sociometric status of an individual increases in relative cohesiveness, his accident proneness decreases, and vice versa. In the case of children their accident proneness is one of the great problems in any socialization program, but the over-protectiveness of the parent is no guarantee of the children's safety. The all-around cohesiveness of their sociometric status is the only guarantee.

23. As sociometric status increases with the volume of role reversal applied to a given group of individuals, the accident-proneness of the small children belonging to it decreases.

24. Role reversing parents and adults replace the absence of siblings and the peer group to only children.

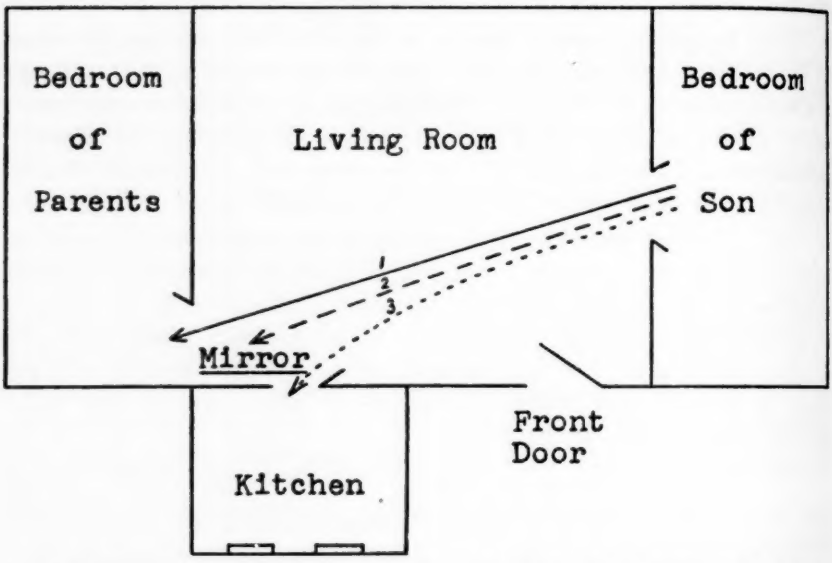
25. Contra-indications: a) The child uses role reversal to manipulate, dominate or punish his parents or adults, determined to "get his way". b) The partner in the role reversal, mother, father, etc., show lack of sympathy or skill in playing their part. The child is then faced with an absence of genuine both-ways role reversal. c) Reversing roles with unrealities, imaginary companions, ideas and dream characters, where the child is compelled to act out both parts himself. d) In order to consolidate role reversal gains non-role playing periods are indicated.

26. Children and lunatics are the two outstanding classes of spontaneous people. All that they are internally is transparent on the surface. Their emotions are in their actions and their actions are the core of their existence.

In Conclusion

The aim of this study has been to describe the methodology and technique of role reversal in its special application to infants and children. It is hoped that the large number of hypotheses produced will stimulate systematic research design.

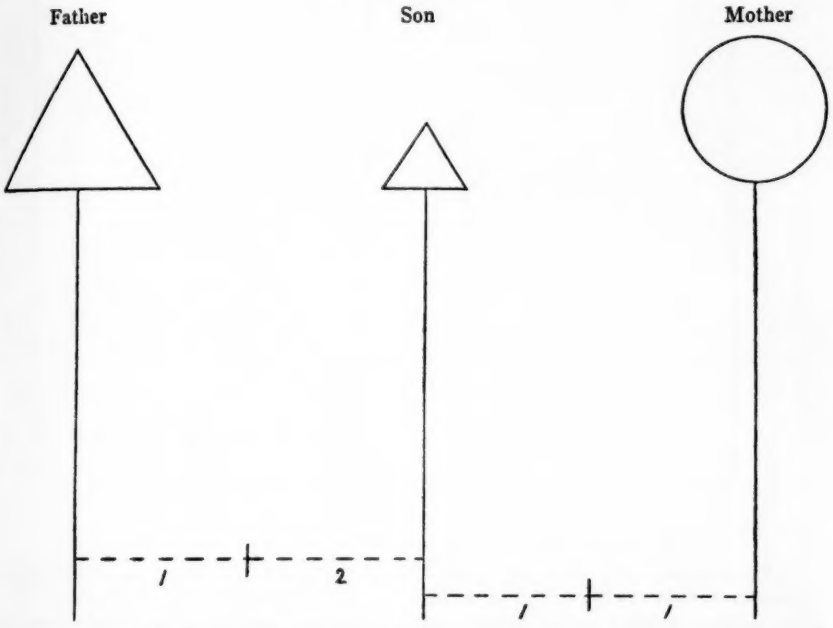
I
LOCOGRAM OF THE HOUSE



Locogram is a position diagram in which the locus of the participants and the movements from one locus to another is the dominant feature. For a model of this kind of graph see J. L. Moreno, *Das Stegreiftheater*, (1923), p. 88.

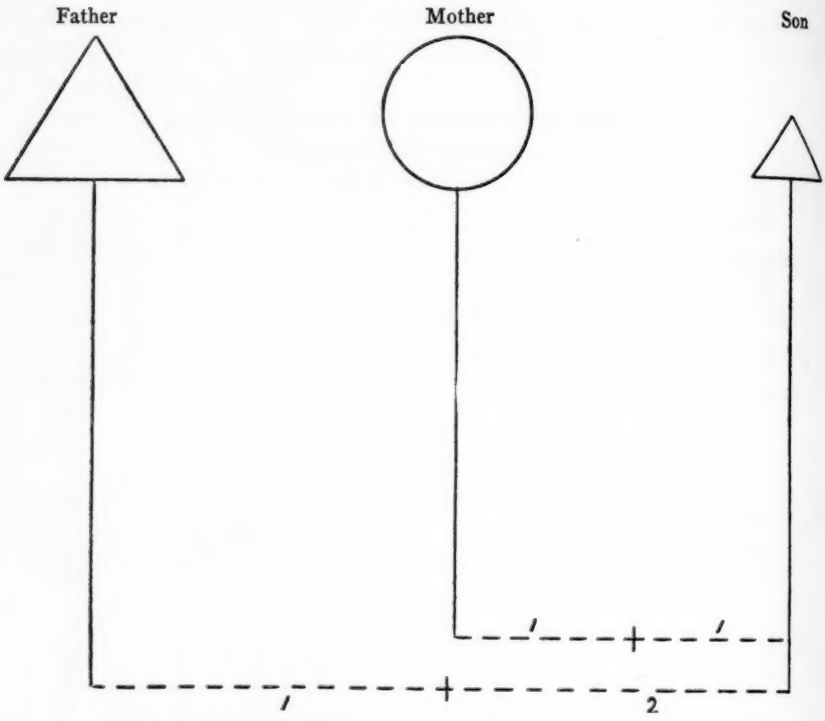
The locogram of a child in the first three years of life has an ever-changing pattern, however, certain main directions of movement can be discerned. The above locogram of the house refers to the period when Jonathan was twenty months old. His chief directions of movement are recorded here in the order of preference, movement 1) towards the bedroom of the parents; 2) towards the large mirror in the living room which played a strategic role in the development of his self recognition; 3) towards the kitchen which led to the windows through which he liked to look at the world.

FATHER-MOTHER-SON IN BED SITUATION
Three-Way-Locus
LOCOGRAM II



Locograms II, III and IV portray the changing positions of father, mother and son in the bed of the parents whenever they have an opportunity to share it. He showed preference for the middle position.

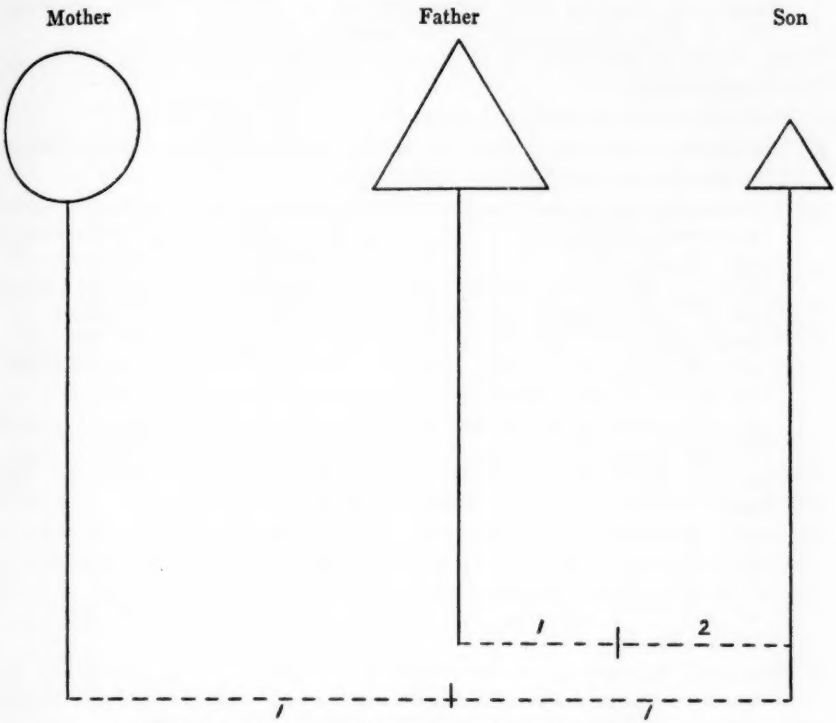
LOCOGRAM III



The next position chosen was outside, but next to mother.

Observations with boys or girls who show preference for "father-proximity" (father's child) in the bed-situation, indicate that by means of the role reversal technique a reconditioning takes place, reducing or equalizing the affinity towards one parent or another. In role reversals with two other individuals (as in the bed-situation) or with more than two, as for instance in the diningroom situation, the child expects to attain the advantages of the "sociometric status" of the person with whom he reverses roles. During the meal, if he is in the role of his mother, he expects his father to carry on the *conversation* with him, as he would ordinarily with his mother. For instance, he feels particularly important when conversing about getting a new car, or preparing for the next trip to Europe, etc., being treated like an adult. The child expects that the rules of the role reversal game are seriously carried out. We should always keep in mind that the distinction between play and reality is an adult concept.

LOCOGRAM IV



The least chosen position was outside, next to father.

The scoring of preference for "mother-proximity" in the bed-situation was reduced after forty-five trials from 9:1 to 2:1.

Notes and References

1. "Psychodrama in the Crib", Zerka T. Moreno, Group Psychotherapy, Vol. 7, No. 314, 1954.
   "Psychodrama in a Well-Baby Clinic", Zerka T. Moreno, Group Psychotherapy, Vol. IV, No. 1-2, 1951.
   "Spontaneity Theory of Child Development", J. L. and F. B. Moreno, *Sociometry*, Vol. 7, 1944. (See discussion of "act hunger" syndrome.)
   The Theatre of Spontaneity, J. L. Moreno, 1943. Translated from the German *Das Stegreiftheater*, 1923.
   These are important collateral readings.
2. *"Roleplaying"* and *"roleplayer"*, terms used in the method of roleplaying developed by Moreno; see *The Theatre of Spontaneity*.
3. *Technique of "role reversal,"* term and method introduced by Moreno; first used in educational and industrial settings, as described by him in *Who Shall Survive?*, 1934, p. 325: "The individuals chose the situation and the roles which they wanted to act and the partners whom they wanted to act opposite in a certain role, or *'they exchanged the roles'* they had in life, or they were placed in selected situations." The application of the technique to mental disorders is especially treated in his "Psychodramatic Treatment of Psychoses", *Sociometry*, Vol. II, No. 2, 1940, p. 123; "Objectification of himself ('patient') can be also accomplished by means of the 'reversal' technique." See also his "A Case of Paranoia Treated Through Psychodrama", *Sociometry*, Vol. 7, 1944, and "Psychodramatic Production Techniques" in Group Psychotherapy, Vol. 5, 1952. His earliest definition of role reversal which is frequently quoted is: "A meeting of two: eye to eye, face to face. And when you are near I will tear your eyes out and place them instead of mine, and you will tear my eyes out and will place them instead of yours, then I will look at you with your eyes and you will look at me with mine," J. L. Moreno, *Einladung zu einer Begegnung*, p. 3, Vienna, 1914.
4. Non-verbal communications with infants and children, using the technique of the *double;* its special use in communication with mental patients. See Zerka Toeman, "Clinical Psychodrama: Auxiliary Ego, Double and Mirror Techniques," *Sociometry*, Vol. 9, No. 2-3, 1946. J. L. Moreno, "The Basic Language", in *Who Shall Survive?*, 1953. Jules H. Masserman, *The Practice of Dynamic Psychiatry*, W. B. Saunders, 1955, p. 621, 643-44. Frieda Fromm-Reichmann, *Principles of Intensive Psychotherapy*, University of Chicago Press, 1950.
5. J. L. Moreno, *Psychodrama, Vol. I*, p. 153.
6. J. L. Moreno, *Preludes to my Autobiography*, Beacon House, 1955.
7. J. L. Moreno, *Psychodramatic Treatment of Marriage Problems, Sociometry*, Vol. III, 1940.
8. Definitions of spontaneity and general spontaneity theory, *Psychodrama, Vol. I*, Spontaneity-Creativity, 1946. Spontaneity is defined in reference to six factors: creativity, cultural conserve, memory, intelligence, anxiety and interpersonal relations.

VALIDITY OF A SOCIOMETRIC HYPOTHESIS — THE FUNCTION OF CREATIVITY IN INTERPERSONAL AND GROUP RELATIONS

LESLIE D. ZELENY

Individuals will be most creative when their associates in a particular activity are of their own choice is one of Moreno's fundamental hypotheses.[1] Stated in another way the theory is that the total human being is more *productive* under circumstances which make possible shared feelings of "liking" or "love" than under other circumstances. For about 35 years Moreno has encouraged philosophers and empirical minded social scientists to test and re-test this hypothesis of creativity.

It is the purpose of this paper to review the findings and conclusions of the *observations* of numerous philosophers and experimental scientists with respect to this thesis and to report their judgment with respect to its validity.

OBSERVATIONS OF PHILOSOPHERS

Philosophers during the ages have been observers of human behavior; and they observed "experimental" and "control" groups too. They simply did not use or have available modern statistical techniques for measuring more precisely the probabilities of their hypotheses. However, their observations were on total populations as well as on small "random" samples. Many philosophers have concluded that life is richest and most creative when people live with those who permit fullest self-expression. A sampling of the conclusions of some of these philosophers may be reported briefly. Buddha (died 483 B.C.) observed social conditions in India. After long study of these social realities Buddha concluded that friendly conduct toward others was a significant kind of behavior.[2] Confucius (died 471 B.C.) having observed Chinese society, arrived at the same conclusion. He said, when he taught the importance of reciprocity among humans[3] "do not unto others what you do not want others to do unto you".[4] Again, Lao Tse[5] (b. 604 B.C.), another keen observer of Chinese civilization, taught that people should have "feeling for others, distant as well as near". Also, Zeno[6] (336-

[1] Moreno, J. L., *Who Shall Survive?* Revised Edition, 1953. See pp. 39-69.
[2] Weech, W. M. (ed.), *History of the World,* p. 318.
[3] Yutang, Lin, *The Wisdom of Confucius,* p. 128.
[4] *Ibid.,* p. 75.
[5] Weech, W. M. (ed.), *op. cit.,* p. 346.
[6] *Ibid.,* p. 168.

364 B.C.), the stoic, taught that all men were brothers. This implies the desirability of friendliness.

The same ethic was considered as fundamental by Jesus for he taught the importance of the brotherhood. He said, "Therefore all things whatsoever ye would that men should do to you, do ye even so to them: for this is the law and the prophets".[7] Again, Sir Abdul Baha Bahai (1884-1921) recognized the importance of each person being sensitive to the needs of others.[8]

It appears that for thousands of years the observations of religious philosophers, including millions of their followers, have indicated the fundamental soundness of the Moreno hypothesis.

But the observations of more secular philosophers have been the same. They, too, have recognized the interdependence of men and the superior results obtained by friendliness. A few samples will serve to represent this group.

Alexander Pope, the poet, looked around the world in the Eighteenth Century and concluded that the "chain of love" was of utmost significance. He sang as follows:

> "Look round our world; behold the chain of love
> Combining all below and all above.
> See plastic Nature working to this end,
> The single atoms each to other tend,
> Attract, attracted to, the next in place
> Formed and impell'd its neighbor to embrace.
> See Matter next, with various life endued,
> Press to one centre still, the general good.
> See dying vegetables life sustain,
> See life dissolving vegetate again:
> All forms that perish other forms supply;
> (By turns we catch the vital breath, and die)
> Like bubbles on the sea of Matter born,
> They rise, they break, and to that sea return.
> Nothing is foreign: parts relate to whole;
> One all-extending, all-preserving soul,
> Connects each being, greatest with the least;
> Made beast in aid of man, and man of beast;
> All served, all serving: nothing stands alone;
> The chain holds on, and where it ends, unknown."[9]

[7] Matthew 7:12.

[8] *The Bahai Faith,* Wilmette, Bahai Public Relations, 1946.

[9] Pope, Alexander, *Essay on Man* (1733) Epistle III. Quoted in Montagu, M. F. Ashley, *The Direction of Human Development,* p. vi.

In the early Twentieth Century, John Dewey expressed the idea of the interacting unity of mankind in the following words, "the acts in which we express our perception of the ties which bind us to others are its [the community's] only rights and ceremonies".[10]

Again in mid-Twentieth Century, Kelly and Rasey[11] have accepted the hypothesis and stated the reasons for their acceptance something like this: Individual man desires to satisfy his basic needs; but as man works to satisfy his individual needs he may interfere with another's endeavor to satisfy *his* needs. If one interferes with another's needs others may either avoid him or act aggressively toward him to provide more freedom for themselves. Since the growth of one's personality is not possible without social contact or may be influenced unfavorably by aggressive contacts one cannot grow or grow properly under either of these conditions. As a consequence, it is observed, that when one acts without concern for others, believing he is free, he, in fact either loses his freedom or has it constrained. Thus, to be free to grow and develop one must live properly in relation to others. In their own concluding words Kelly and Rasey declare that "the individual who sees that others are essential to him, that there can be no progress for him without others, sees the true significance of freedom".[12]

Finally, Montagu[13] after a careful review of modern findings on the nature of the human animal, declares "for the human biological organism to grow it must have the encouragement of other persons or it withers".

These observations are not new; they are simply confirming observations. A central theme seems to be that the self and society develop best when human beings live in a state of reciprocity. Moreno has stated his observations in the same manner when he said, "love and mutual sharing" is a "powerful, indispensable working principle in group life".[14]

To repeat and expand the hypothesis a bit (without departing from what is found in it) we may say it recognizes: 1) the importance of the individual and his self-expression, 2) respect for the dignity of each individual by every other individual or love, and 3) the unity of all individuals in some kind of a "oneness".

It appears that Moreno's hypothesis is identical to the hypotheses accepted by many philosophers, ancient as well as modern. Moreno's hy-

[10] Dewey, John, *Human Nature and Conduct,* pp. 332-33.

[11] Kelly, Earl C. & Rasey, Marie, *Education and the Nature of Man,* pp. 101 ff.

[12] Kelly, Earl C. & Rasey, Marie, *op. cit.,* p. 103.

[13] Montagu, M. F. Ashley, *op. cit.* This theme is developed throughout the book.

[14] Moreno, J. L., *Who Shall Survive?* Revised Edition, p. 3, p. XV.

pothesis, therefore, is old, not new; and Moreno himself has declared that "it is from religious systems that sociometry has drawn its chief inspiration".[15]

What Moreno has tried to do is to show the modern *scientific* world, which relies primarily upon *controlled observation,* aided by statistics, that scientific observations can be made on human populations to test again the hypothesis of philosophers with respect to the *creative* power which love can release.

Observations of Social Scientists

We turn, therefore, to an examination of some of the findings of experimental social science in instances where some modern methods of observation were used.

In science as well as philosophy Moreno has been a leader. In the early part of this century Moreno saw that one could test the degrees of creativeness (productivity) in groups organized upon the foundation of friendliness and compare the creativity in such groups with the creativity of groups organized by chance or even those organized upon the basis of unfriendliness. He challenged the scientific world with these ideas when he published his first edition of *Who Shall Survive?* (1934). His great contribution in this area was the idea for a "test" which would discover choices for associates with respect to particular kinds of group life. This test made possible the "creation" of groups organized according to the precepts of the fundamental hypothesis which previously had been tested only by general observation and insight derived therefrom.

Thus stimulated, trained social scientists have carried on controlled observations of small groups to test the validity of the sociometric hypothesis. As we have seen, from a strictly scientific point of view, *validity is dependent upon findings which show that more creativity-productivity is released in groups organized upon the basis of "mutuality" than in groups organized upon a non-mutuality basis or by chance.*

A sampling of some recent researches are reviewed here to show the trend of the findings.

Findings With Respect to Creativity-Productivity in Education

Experimental studies in education confirm the hypothesis. For example, Richardson[16] in a school in London, England, carried on a series of ex-

[15] *Ibid.,* p. XI.

[16] Richardson, J. E., "Classification By Friendship: Sociometric Techniques Ap-

tensive studies to measure relationships between the sociometric organization of small class English groups and growth in the ability to write compositions. Equated classes were organized. The experimental class was carefully structured sociometrically and small group activity was the principal means of learning. The control group was measured sociometrically, but during the experiment it was not divided into small groups where friendly interaction was possible; rather it was taught by traditional class methods. The procedures in the experiment were elaborate; and the sociometric organization of the experimental groups was often changed according to choices expressed on frequently administered sociometric tests.

After over a year of careful observation of the two classes Richardson reported that the individuals in the experimental group progressed faster in English Composition than did those in the control group and that the attitudes of students toward the work improved more in the experimental than in the control group. But more significant than mere production was the finding that it was interpersonal attitudes among the members of the experimental class, including the teacher, that played a significant part in the accomplishment. The nature of these interpersonal relations was that of "personalities reacting spontaneously with one another in the effort to use these techniques by using them cooperatively".[17]

Again, French[18] reported on the findings of several research projects to discover "the determinants of group productivity". Special reference was made to careful observations of five matched groups participating in a training conference. French reported that in groups where cooperation was encouraged there was greater creativity as measured by "productivity per unit of time" and that there was more friendliness in the process. Observations also showed that members participated more when the leader participated less. This would indicate that freedom from "domination" permitted more individual spontaneity. Related to this point was the observation that "the behavior of an individual is determined considerably by his perception of the reactions of the others in the group to him".

Robbins[19] carried on a comprehensive study of "creativity" in college

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plied to the Teaching of English", in *Studies in the Social Psychology of Adolescence*, C. M. Fleming (Ed.), (London: Routledge and Kegan Paul Ltd., 1951), pp. 3-148.

[17] *Ibid.*, p. 142.

[18] French, John R. P. Jr., "Group Productivity" in *Groups, Leadership and Men*, pp. 44-54.

[19] Robbins, Florence G., "The Impact of Social Climates Upon a College Class", *School Review*, 1952, 60:275-84 (May, 1952).

classes with different social atmospheres: the major contrast being between the democratic type of atmosphere deliberately fostered and the autocratic type of atmosphere, also deliberately fostered. The observation of students in the democratic atmosphere showed that spontaneity and creativity were released in students in great degree. Cooperation was much in evidence as was friendly competition. Students felt free from domination, yet were sensitive to other pupils' needs. There was much happiness and no evidence of less learning. In the autocratic classroom spontaneity was dead.

Zeleny[20] also conducted an educational experiment. Four pairs of small equated groups were used. The four experimental groups, partially sociometric in composition, discussed textbook assignments in an atmosphere of freedom from instructor domination but with instructor help on request. The four control groups were members of classes instructor dominated but which studied exactly the same materials. After three weeks groups were measured with respect to changes in knowledge and personality development. With respect to knowledge changes in all four pairs were greater in the experimental than in the control groups, though slight. When the results of all four groups were considered as a whole the chances were 25 to 1 that the obtained difference was more than zero in favor of the experimental group. The experimental group also showed more "desirable" changes in personality development.

It appears that experimental studies in education show that groups organized upon the basis of friendship and/or freedom tend *to learn more* than groups not so organized. This means that reciprocity among humans in schools results in more "production".

Findings With Respect to Creativity-Productivity in Industry and Business

Our sampling of researches related to productivity in industry and business also support the sociometric hypothesis.

After reviewing a vast array of contemporary research, Riecken and Homans conclude that "the willingness of an individual to work hard, here and now, depends upon the rewards he has received from the achievement of group purposes (external rewards) and those he has received from sheer association with others in the group in the course of achieving group pur-

[20] Zeleny, Leslie D. "Experimental Appraisal of a Group Learning Plan", *J. of Educational Research,* Sept., 1940, pp. 37-42.

poses (internal rewards)".[21] To illustrate this interpretation they cite a carefully reported observation of Babchuk and Goode[22] with respect to a staff of salesmen of men's clothing. With a base pay plus one per cent commission on sales these salesmen had worked in cooperation for a long time and had divided the responsibility for display and stock maintenance. Suddenly the management, to keep the salesmen from leaving for war industry, raised the commission on sales to six per cent. This increased pay caused the salesmen to compete for customers and for the opportunity to make the extra commission which had become so important. Interpersonal conflict and neglect of display and stock-maintenance resulted; but the sales of the group were relatively high; probably due to increased business due to war conditions. However, though the financial rewards were high, the salesmen finally agreed that the dissatisfactions in interpersonal relations were too great. Two of the salesmen (not managers) devised a plan to share non-commission-paying work and equalize commission-earning opportunities as well as drop sales malpractices. The plan was adopted by the sales force. These changes were accompanied by satisfying interpersonal relations; and sales continued high. The group was willing to stop activities which caused interpersonal conflict because "friendly interaction" was worth more to them than unfriendly interaction. Friendly interaction was as an important motive in their lives as was earnings; these workers found a way to have both.

In his review of the well known Hawthorne experiment Homans[23] showed how a group of girls produced more relays as their feelings of "like" for each other became more intense and as they believed the management freed them from the restrictions of "live" supervisors. This study becomes all the more significant when compared with the observations of production in the Bank Wiring Observation Room in the same plant. These men organized to protect themselves from changes decided upon "upstairs" and even punished members of their own group who tried to produce more than that determined by their own norms. Thus, the men, restricted by many

[21] Riecken, H. W. & Homans, George C., "Psychological Aspects of Social Structure" in *Handbook of Social Psychology,* p. 814.

[22] Babchuk, N. & Goode, W. J., "Work Incentives in a Self-Determined Group", *American Sociological Review,* 1951, 16, 679-87.

[23] From Chapter 4 "The Western Electric Researches", in *Fatigue of Workers: Its Relation to Industrial Production* by the Committee on Work in Industry of the National Research Council (New York: Reinhold Publishing Corp., 1941). Reprinted in Swanson, Grey E.; Newcomb, Theodore M. and Hartley, Eugene S.; *"Readings in Social Psychology",* Revised Edition, 1952, pp. 639-49.

technical rulings, were acting against the management and even against one another to some extent. Production was limited. The girls were in cordial relations with management and among themselves. Production increased.

Coch and French[24] tested the hypothesis that "collaborative participation in making decisions" will improve productivity. Technical changes in production were introduced to the workers in three different ways. The first way involved all persons concerned with the change in "collaborative planning" for the change. In the second way changes were planned by an elected committee. And in the third way the change was carefully explained to all concerned by the management. Observation of subsequent production showed that the greater the participation in planning of the change the greater was the cooperation and production and the less there was of inter-personal aggression.

Katz and Kahn[25] reviewed numerous research studies of productivity. Findings were that productivity is greater in workers where supervision is general rather than close and greater where skill is required than where it is not. In addition, in other studies it was shown that clerical employees, rail-workers and factory workers in high producing groups tended to rate "their group above others in ability to get the work done". This finding, based on a number of research reports, is interpreted by the authors to support the hypothesis that mutuality of feeling (group belongingness) contribute to productivity.

It would appear from this sample of experimental research in industry that the sociometric hypothesis is more likely than not to work in practice.

Findings With Respect to Creativity and Productivity in Team Work

Various types of teams have been studied from the point of view of productivity. This sample of studies shows that in each instance teams "scientifically" organized to release creativity in the members by means of satisfying inter-personal relations "produced" more of what they were trying to do.

Research with basketball teams and surveying crews shows the same results as do the other studies of effectiveness in relation to productivity.

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[24] Coch, Lester and French, John R. P. Jr., "Overcoming Resistance to Change", *Human Relations*, 1948, 1, 512-32.

[25] Katz, Daniel & Kahn, Robert L., "Some Recent Findings in Human Relations Research", in Swanson, Guy E., Newcomb, Theodore M., Hartley, Eugene L., *Readings in Social Psychology*, Revised Edition, 1952, pp. 650-65.

Fiedler[26] made his careful observations on 26 basketball teams and 22 surveying crews. A comprehensive test of interpersonal perception was administered to the basketball players and surveying crews. Results showed that the ASo score of the most preferred co-worker in surveying, and possibly also in basketball, is related to team effectiveness. This study also implies that the choice for teammate in successful teams is that of a discriminating person. It suggests, also, that the choice is more related to successful task performance than to mere congeniality. In other words, Fiedler found that in effective crews and teams it was the task oriented co-worker who was preferred as an associate rather than the merely congenial associate irrespective of ability. Probably, congenial but ineffective associates tend to be rejected.

This study confirms Moreno's thesis that choices for associates in a group must be made with reference to a specific criterion (work choices vs. home choices).

Goodacre[27] compared the performance of certain Army rifle squads with certain interpersonal behavior of the members of these squads and found that the men in high scoring rifle squads tended to "buddy around" together after duty hours, experience relatively few disagreements among themselves and were proud of their squad. Thus, again performance was related to satisfying interpersonal relations.

A unique experimental study was worked out by Lippitt[28] who trained community leaders—some in strong or relatively cohesive teams and others in weak or relatively less cohesive teams. He found that those trained in the cohesive community teams initiated 21.6 new community activities while those trained in groups where cohesiveness was weak initiated approximately one half (11.7) the number of new activities upon return to their communities.

Again, the sociometric hypothesis appears more probably true than not true.

The Significance of the Democratic Hypothesis

It appears that the observations of both philosophers *and* social scientists indicate that it is more likely than not that individuals will be most

[26] Fiedler, Fred E., "Assumed Similarity Measures as Predictors of Team Effectiveness", from *J. of Abnormal and Social Psychology,* 1954: July, 49, pp. 381-88.

[27] Goodacre III, Daniel M., "Group Characteristics of Good and Poor Performing Combat Units", Sociometry, May, 1953, xvi, No. 2, pp. 168-79.

[28] Lippitt, Ronald, *Training in Community Relations,* p. 216.

creative when their associates in a particular group are wanted and a spirit of relative friendliness and freedom prevails. This significant conclusion is especially significant for the people of the United States for it is upon this hypothesis that much of the philosophy of democracy is built. *The foundations of democracy therefore, appear to be sound,* tested by philosophy *and* sociometry.

The philosophy of American democracy declares that the Creator endowed mankind "with certain unalienable Rights", and that each individual has the right for "life, liberty, and the pursuit of happiness".[29] These statements recognize the nature of the dynamic self and imply that "all men have a common humanity" under their Creator. American democratic theory also declares that the power of the state is granted by or with consent of the *individual* people who are the members of the state. Thus, the rights of man cannot be taken away or given by the state—they are inherent and inalienable. This is the factor that distinguishes the democratic state, says Douglas. In the totalitarian state rights are determined by the government, but in a democratic state they come from the Creator as expressed in individual people.

With this American idea of democracy the Moreno philosophy is in entire agreement. Moreno starts with the creativity-spontaneity of the individual which is in the nature of man, given by the Creator, and builds his philosophy of interpersonal relations and of society in terms of the satisfaction of the needs of the individual. He would have all people enjoy the benefits of democracy.

In what way, then, is the Moreno philosophy different? Actually, it is not very different. But it does place special emphasis upon the importance of the individual in a century when the individual tends to be forgotten; and it stresses the *creative nature* of the individual, teaching that society will become good to the extent that circumstances release the creativity of individuals. The greatest release of creativity is possibly only in a democratic type of society.

Conclusions

One way to estimate the significance of a group of studies is to relate them to some fundamental hypothesis which may warrant testing by means of observational research. In this article the writer has endeavored to sub-

[29] Douglas, William O., *An Almanac of Liberty,* pp. 7-8. See also John Locke's *Essay Concerning Human Understanding* (1690) and *The Declaration of Independence* (1776).

ject the sociometric hypothesis of creativity to the test of observations, both "natural" and controlled, which have been made in ancient, and recent times. The sampling of observations cited confirm the probability of the hypothesis, at least within the framework of free societies like England and America.

These findings strengthen the democratic idea in general. However, we must note that neither the philosopher-observers nor the scientist-observers have sufficiently reliable information to make their hypothesis into a social "law". We find there are in the world many anti-sociometric hypotheses which place an interpretation on events the opposite of that of the sociometric hypothesis. Also, statistical findings are not those of a one-to-one relationship. There are other probabilities—though they may be expected to happen less often than the probability stated in the sociometric hypothesis. We can say, however, that the sociometric hypothesis is sufficiently reliable to be used as a practical working hypothesis within the framework of American democracy and other free societies. Its application promises the stated results more often than the application of the opposite hypothesis.

We observe that much of the desired spontaneous life of individuals can take place only in small group situations like the home, the neighborhood, "teams" in office or in military groups like an air crew, gun and submarine crews, squads, and the like.[30]

It is to the problem of providing ways of releasing creativity in small group life that many behavioral scientists have, in recent years, devoted much attention. The reason for this effort has been the realization that small group life is universal, that regardless of social-political-economic conditions of the larger societies, daily, intimate social life goes on, generation after generation. In some ways, then, the opportunity for individual self-realization can be achieved only through improvements in the small group life of peoples. Perhaps, with the aid of sociometry applied to small groups, more men can be made free—despite their authoritarian governments.

One final word. Some critics give the name "groupism" to the findings outlined in this paper. They fear the group may submerge the individual. It may, in some instances. No "social law" has been found. But observations show that *the chances are greater that individual human growth will be fullest when relations with other humans are those of mutual "love"*, rather than any other kind.

The democratic ideal gambles on mutual love. The autocratic ideal emphasizes submissiveness to a leader.

[30] Homans, George, *The Human Group*, Chapter 18.

CREATIVITY AND SOCIOMETRIC STATUS IN CHILDREN*

MARY L. NORTHWAY AND MARGARET MCCALLUM ROOKS

*"The cornerstones of sociometric conceptualization are the universal concepts of spontaneity and creativity."***

J. L. MORENO

INTRODUCTION

Creativity has long been a challenge to the psychologist. Some schools of thought believe that it arises as a kind of neurotic trend out of the individual's repressions, compensations, sublimations, or mal-adjustment. However, sociometric thought, growing out of Moreno's philosophy of spontaneity, considers creativity the essence of human activity in its natural form which becomes lost only when it has been stultified by environmental, particularly social, pressures.

The scientific difficulty in regard to creativity is to find a method for studying it which will meet the requirements of rigorous experimental design, for creativity is essentially a *process* by which an individual achieves his aim by using his own means, rather than by following those enforced upon him. However, despite Moreno's forceful statements, the general tendency has been to consider it not as a process but as a *product* (3). Thus, art products of the past and the present, of the adult and the child have been evaluated as creative largely in terms of some standards of criticism which the appraiser has brought to the task. By this approach, the products of the young child or the non-skilled adult are rarely considered creative because they do not even approximate any art standard. However, if the process by which they were produced were examined, it might be found to be essentially creative, that is, it was engendered from inner effort and followed original means towards the desired goal.

In approaching this complicated area we decided to attempt to reduce it to its simplest form. Working in an experimental school whose educational philosophy is based on mental health values, we discovered that the

* This study was carried out as part of Research Project 605-5-147 of the Canadian Federal Government, at the Nursery School and Kindergarten of the Institute of Child Study, University of Toronto, under the supervision of Professor Dorothy Millichamp.

** Readers of SOCIOMETRY will be well aware that spontaneity-creativity is the crux of the Morenian doctrine, and will be familiar with the numerous empirical studies which he has made.

children's day varies from periods in which they are expected to conform to a defined way of acting, to periods in which they are free to follow their own bent. That is, they have some opportunities during the day to be conforming and others in which they are free to be creative. Thus every child has had some experience in both conforming and creative situations. So we thought, suppose we can devise a situation which a child may deal with successfully *either* by conforming or by being creative. Such a situation would be one in which he may, but is not impelled, to follow a pattern which an adult has demonstrated for him, or equally he may achieve the goal by following his own means. From this we would expect to find:—

1) That children vary in the degree to which they use their own means. Some will show more originality than others. The ones showing most use of their own means we will call "creative", and those following the demonstrated pattern we will call "conformers".

2) That the more creative children will show greater social integration and have more social bonds than the less creative children.

Devising a Creativity Measure.

While sociometric tests offered a straightforward measure of the children's social status in the group, it was more difficult to devise a situation in which children could show varying degrees of creativity and in which their level of acquired skill would not be the significant factor. Therefore, the greater part of our effort was to devise a test situation which all the children could master, but in which each child was free to attain the goal either through following a set pattern or by using more or less of his own means.

In brief, the situation to measure creativity was as follows. Two form boards were made to represent houses. Ten blocks representing windows, doors, brick walls and chimneys could be filled into the spaces in any arrangement. The adult showed the child one form board and filled it in according to a model arrangement. The child was then given the other form board and blocks and told "There's a house for you; you can make a house." No suggestion was given as to whether he was to make one like the adult's or not. In all he made four houses and the amount of similarity (calculated by number of blocks he placed in the same way as those in the adult's model) yielded his score.

To check the skill factor, after the experiment he was told to make one like the adult's to ascertain that he was capable of so doing.

Preliminary studies using children of a comparable age to the subjects showed that they were interested in the task, could manage it and the degree

of conformity-creativity shown varied over a wide range. Thus the McCallum form boards were accepted as a means of measuring creativity.

The *hypothesis* then reduces to this: Creativity, as measured by the McCallum (1) form board will be positively related to sociometric status.

Method

The subjects were thirty children in the Nursery School and Kindergarten of the Institute of Child Study.

Each was given a standard sociometric test (spontaneous three choice, three criteria) (2).

Each was given the McCallum form board test of creativity. He watched the adult make a house and was four times told to make a house out of his blocks.

Results

Scoring was done by counting the number of items the child placed identically to those of the model on each of his four trials, adding and averaging these. Thus scores could range from 10 (complete copying) to zero (no copying). The actual range was from 8.25 to 2.75. The lower the scores, the more creative the child. The distribution of scores is shown in Table I.

From this distribution the subjects were divided into two groups, *Copiers,** those with scores from 5 to 8 (12 cases) and *Non-copiers* (creative children), those with scores from 2 to 4 (18 cases).

No clear relationship was found between copying and intelligence, age or M.A.

The position of each Copier and Non-Copier in relation to his sociometric status is shown in Chart I. The base line gives the sociometric score.

Each copier is indicated by x; and each Non-Copier by o. The vertical line A shows the point in the sociometric scores below which no Non-Copier falls. The vertical line B shows the point above which no Copier falls. The average sociometric scores of the Copiers (3.75) and the Non-Copiers (8.39) are shown to the right of the chart. The number in brackets within each section of the chart is the average copying score of cases falling into that sociometric area.

* Copiers and non-copiers are used throughout the actual thesis. To justify that this test actually measures *creativity* requires considerable theoretical defence. "Copiers" and "non-copiers" are operationally descriptive and invoke no dispute at the experimental level.

TABLE I

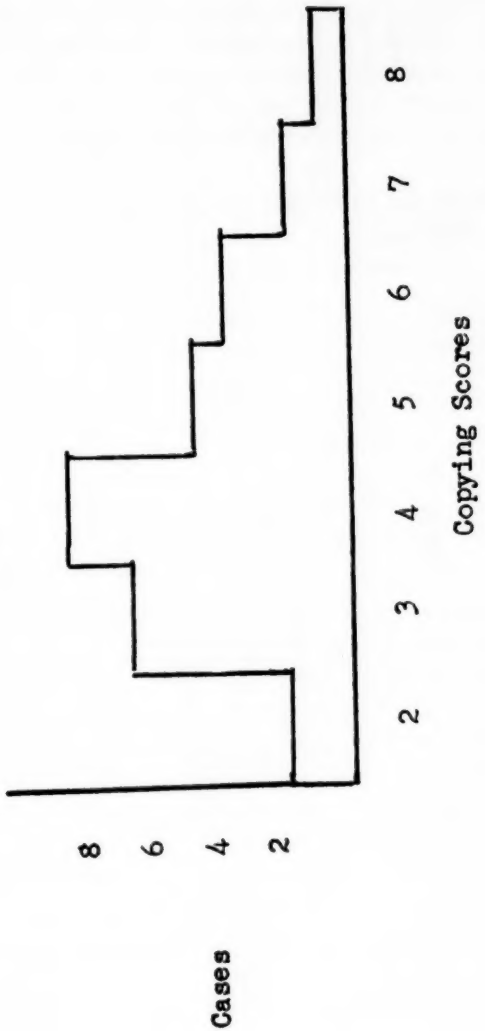

CHART I

		A.									B.									Average sociometric scores
							(3.69)							(4.10)						
Non-Copiers				o					o	o								o		8.39
Cases		o		o					o	o										
	(6.06)	o		o	o	o	o	o	o	o	o			o	o	o				
Copiers	x x					x	(6.31)													3.75
	x x					x														
	x x	x		x	x	x	x	x		x										
	0 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		

Sociometric Scores

Looking at this chart it is seen that:

1) All cases very low sociometrically are Copiers (non-creative).

2) All cases very high sociometrically are Non-Copiers (creative).

3) Copiers and Non-Copiers both appear in the middle range of sociometric scores. But the copiers and non-copiers are actually more differentiated with this group than they are between the high and low groups.

4) The average sociometric score of the Non-Copiers is 8.39 and of the Copiers is 3.75.

The differences shown in the Chart can be tested by the Chi-Square formula. A Chi-Square was used to test the null hypothesis that the two groups were samples of the same sociometric population.

	Copiers	*Non-Copiers*	
Sociometric Score 0– 9	12	11	23
10–18	0	7	7
	12	18	30

The Chi-Square yielded a value of 6.09 with an associated P of .015. Using Yates correction of Chi-Square, a value of 4.6 with an associated P of .035 was obtained. Since both these values are above the 5% level of confidence, the null hypothesis should be rejected—the two distributions based on Copiers and Non-Copiers are different at this level of confidence.

The relationship between copying and sociometric status is shown also in the following tables. Table II gives the average copying score for 4 levels of sociometric scores. Table III gives the average sociometric score for each level of the Copying scores.

From these tables, it can be seen that:

1) With increase of sociometric score the average copying score decreases.

2) For each decrease in copying score the sociometric score tends to increase (except at the top level). These 2 cases are the 2 youngest children used in the study.

From these sociometric results, it may be concluded:

1) That children with very high sociometric scores are non-copiers,

"creative", and that children with very low sociometric scores are copiers, not "creative";

2) That copying "creativity" varies positively with sociometric status.

TABLE II

AVERAGE COPYING SCORES FOR FOUR LEVELS OF SOCIOMETRIC SCORES

Number of Cases	*Sociometric Scores*	*Average Copying Score*
7	0—2	5.6
8	4—5	4.8
8	6—9	4.3
7	10+	4.1

TABLE III

AVERAGE SOCIOMETRIC SCORES FOR EACH LEVEL OF THE COPYING SCORES

Number of Cases	*Copying Scores*	*Average Sociometric Score*
1	8+	2
2	7	5
4	6	3.5
5	5	3.8
9	4	8.0
7	3	10.0
2	2	3.0*

* These two cases are the two youngest children used in this study.

CONCLUSIONS AND INTERPRETATION

The results clearly show that the use of copying a model or using one's own means to attain a goal are related to sociometric status in this small group of young subjects. Life in Nursery School gives the child experience in both approaches and indeed provides situations in which one approach is more satisfactory than the other. In a situation such as this test, which can be met successfully by either approach, apparently some children tend to use the following-a-pattern, doing-as-the-adult-does method; others rely on their own original attempts. The approachers-by-copying apparently are those children who have fewest social bonds; the approachers-by-own-effort those who are most socially supported. The most interesting speculation to be followed up is that indicated by the results of the middle sociometric group. From these we might speculate that if the child uses the copying approach, he uses it extensively; if he uses his own approach, he uses it

to a greater extent that even the children in the highest group do. Further investigation of this clue appears to us to be important. If the population of middle sociometric status includes both creators and conformers, could the factor that determines which they will be, be not their status but the type of relationships they form within that status range. In other words, may we find that the pattern of relationship, rather than status per se, is the crucial item.

Whether children playing with blocks contributes to our understanding of such a vast activity as creativity may be questioned. Whether copying and non-copying can be considered representative of creativity may be disputed. We believe they do. How else can the roots of creativity be examined in the young child, other than by observing how he approaches a task where he is free either to follow a model or to use his own ingenuity? If results from such a situation are accepted as indicating creativity, it will be found that they fit well into the theoretrical thinking on which sociometry is based, namely that creativity arises out of social integration, not as a compensation for it. The individual who has social bonds is not fettered by them, but rather supported. In his dependency he achieves the freedom to be himself and to create in his unique way.

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ENERGY CHANGES UNDER CONDITIONS OF CULTURAL CHANGE

MARGARET MEAD

Moreno's system of studying social phenomena has always systematically included allowances for cultural differences, under such headings as "the problem of collectivity . . . with patterns of behavior, roles and mores" (1) and "the focal pattern of role relations around an individual." The "cultural atom," with the full recognition that the "social atom," "the pattern of attractions, repulsions and indifferences" which "can be dis-

cerned on the threshold between individuals and group" is "part of the same social reality" (2). Thus cultural conditions under which spontaneity flourishes or diminishes have been a legitimate object of inquiry but have received relatively little attention for two reasons. The bulk of sociometric research has been conducted within our own culture where the only allowances which had to be made were those of different sub-groups' versions of the culture, as between the culturally patterned behavior of Negro and white Americans or of different socio-economic groups within the United States. In the second place, very little detailed sociometric work has been done in connection with anthropological field work for very obvious reasons. Primitive cultures are exceedingly valuable hypothesis-generation situations where the degree of contrast manifested is such that the expenditure of field time on detailed sociometric studies has seemed hardly justified. With familiarity with sociometric theory it is possible to use a knowledge of the patterns of other cultures as illuminating qualifications on sociometric findings in our own society.

Such a use of comparative materials is exemplified by (3) the specifications of the cultural conditions of spontaneous behavior in a society in which kinship patterns are highly important, that a Manus canoe crew worked better if composed of cross cousins who are not attracted to each other (negative *tele*), than if composed of brothers-in-law who are attracted to each other. The cultural specification that joking and familiarity were forbidden with or in the presence of brothers-in-law threw a pall on groups in which such relatives were present, and the display of zest—and the resulting greater willingness to paddle rather than wait for the wind—was reduced when respect relatives were present, and increased when joking relatives formed part of the canoe crew. Anthropologists can easily supply a whole series of comparable situations in which the degree of "spontaneity" which will be displayed is predictable, as the kinship system, caste system, sex division of labor, calendrical system, initiatory cycle, etc., are specifically involved. It can be quite easily demonstrated that in each society there are highly patterned situations within which individuals who would accomplish less in a differently patterned situation will accomplish more. The "more" here is regarded as subject to measurement, in units of time, or other units of productivity, as "more miles covered," "more houses built," "more roof tiles laid," "more traps set," "more sago palms processed," etc. The actual preferences or repugnances of individuals for one another have to display themselves within the constraints of the patterned definitions of the situation, where the definition over-rides such personal prejudices.

One of the problems which is of active concern in both theoretical and practical approaches to culture change is the question of the availability of more or less of the energy of the members of a group for a specific activity. When, under conditions of change, productivity decreases, it is customary to speak of loss of zest, diminution of joie de vivre, growth of anomie, apathy, lowered morale. Such conditions among primitive peoples, as the abolishing of warfare and headhunting, the passing of the buffalo, or, among peasants, the cessation of drinking bouts or annual saturnalias under a puritanical regime, are well recognized in the literature, and the tangible "effects" can be measured in birth or survival rates, state of gardens, houses, savings, expenditures on feasts, etc.

A second situation has also been recorded in which, under conditions of change, there is available a greater amount of energy, new villages are constructed, new crops planted, schools and hospitals constructed by community effort, roads built, etc. It has become of great importance for social planning to get some understanding cultural patterns of the conditions under which a group of individuals of known culture will respond with increased energy or with apathy.

An attempt to increase the well-being of a community may take two forms, an effort to raise the total supply of human energy available in a given group by improving the nutritional and health status of the members of the group, or by relating the new patterns of social organization to the old patterns in such a way that the new pattern will facilitate the expenditure of more of the available energy. In the community development program in Greece (4), the assumption was made that the inhabitants of Greek villages which were remote from main highways were "under-employed." Stated in energy terms this meant that even at their low level of nutrition and health they were capable of more work if the channels for such work were provided in such a way that they were "motivated" to perform it. There are other instances in which the creation of new "incentives," such as higher wages, have failed to evoke a greater expenditure of energy because of the low nutritional and health level of the group of workers. The most dramatic instances of this latter type occur when, for example, one member of a family, all of whom are eating the same extremely deficient diet, shifts to a new occupation requiring a greater expenditure of energy and goes into a coma, the extra requirements of the task—which he wanted to perform—being too much for his marginal nutritional status.

The technical assistance programs of the various United Nations agencies always have to take into account whether a given group is in fact "under-

employed" in energy terms, so that it is not imperative to improve health and nutrition before new demands for energy expenditure are made on the population. But, in this paper, I wish to deal with the way in which perceived discrepancies between old patterns and new patterns may act to increase or decrease "spontaneity," that is channel available energy into an activity in such a way that there will be either measurably more or measurably less productivity, with the contrast between "apathy" and "anomie," and the sort of behavior which is described as "high morale" or "revolutionary vigor" which is characteristic of the performance of groups who have experienced a "revitalization movement," (5) through the development of a new religious and/or political ideology, through an alteration in social status, a change in habitat, a recently consummated revolution, the attainment of national independence, etc.

In such situations, the individuals who are involved as adults in the new patterns of group activity will have been reared, and their characters will have been formed, under the old patterns. Given types of activity—hunting, house-building, trading expeditions, road building, planting and harvesting, working in a factory, serving in the army—will have been previously defined in ways which drew upon individual energy expenditure with varying degrees of spontaneity and resulting productivity. Although the physical conditions of work, hours, tools, etc., may have a certain significance, these belong more in the same area of discourse as nutritional and health status. With better tools more work can be done, but whether the tools will also involve a greater expenditure of individual energy will be a function of how the better tools are perceived by their users. A recent detailed study (6) of the changing perceptions of a group of steel workers, before and after the mechanization of the process, gives a vivid demonstration of changes in productivity. The new process was first perceived as involving loneliness and strain—in contrast to the earlier type of team work—then the workers shifted to a sense of the power which the new machinery gave them, with increasingly high production goals and achievement.

Primitive cultures provide us with a wealth of material on the type of fit between the cultural character of the group and the amount of energy released through culturally patterned social activities.

We may compare, for example, the Pilaga Indians (7) of South America and the Arapesh (8) of New Guinea, both people with a very low and unreliable food supply, preoccupied with the giving and receiving of food from other members of the group. In both groups the quarry of a successful individual hunt is larger than a single family can be permitted to consume,

so that the kill (or among the Pilago, the catch) has to be sub-divided. Among the Arapesh there are a variety of procedures available for the man who has killed, or obtained as a gift, the whole carcass or a large section of a tree kangaroo, a cassowary or a bush pig. He may cut it up and triumphantly initiate an exchange by giving it publicly to a series of persons, who will subsequently have to return him whole animals; he may bank it with a hereditary exchange partner, whether the exchange partner wants it or not, which places him again in the super-ordinal position; or he may triumphantly use it to return a former series of small solicitory gifts. Finally, in case none of these more ceremonial activities are in order at the moment, he may send all of his female relatives over hill and dale distributing small largesse of meat among all of his more distant kin and affinal connections. In all of these contexts, the emphasis is upon the pleasant situation where one gives in such a way that later one will receive as much or more than that which is given. The big expenditure of labor in hunting, or in raising a domestic pig to maturity, is rewarded by the situation in which the meat is distributed.

Among the Pilaga, the situation is defined very differently. Henry, in an intensive, detailed analysis of giving and receiving of food, demonstrates that the way in which the productive Pilaga gives more than he receives is felt as socially unrewarding. An externally similar situation, in which the whole group is dependent upon the very unequal contributions of different members, within a framework of small family organization and wider food distribution, is in one case—the Arapesh—phrased positively, so that each individual feels rewarded by the experience of contributing food to others, who are expected to respond with love, helpfulness and compliancy. In the other case, among the Pilaga, Henry described the situation as follows (9):

> "Thus each catch of fish, every load of forest fruit that comes into the village, is apportioned along a hairline of social distance, so that one never quite knows from one distribution to the next whether the hairline will so move as to include him in the give-away or leave him out. These positions become so finely drawn that it becomes difficult for a person to know exactly where he stands in each economic situation. In the case of any distribution in the household he is never too far from the distributor as to be hopeless, yet perhaps not quite close enough to receive. Nor can he ever be so sure of his social position as to be content that another has received while he himself has not. Over all of this loom the threat and reality of hunger to drive home the pain of the real or fancied 'economic slight'."

Or we may contrast the way in which the lagoon dwelling Manus of

the Admiralty Islands built houses under their old socio-economic system as it existed twenty-five years ago (10), and today, after a major cultural transformation. House building was an onerous activity; each house post, each piece of betel palm for the flooring, each ten shingles of thatch had to be bargained for with trade friends among the land people, with whom relationships were tense and difficult. Within the village labor was mobilized along elaborate patterns of economic obligation between an entrepreneur and his dependents and affinal relatives. Each stage was accompanied by feasting in which the exactness of the required reciprocities and the legitimacy of a display of anger over-shadowed any pleasure which there might have been in the feast itself. A house building operation was protracted, halted by a variety of events all of which were interpreted as due to the hostility and uncooperativeness of other men, or the sins of one's own household which aroused the punitive anger of the ghostly guardians of morality. What spontaneity there was in such operations as sinking great house posts deep in the floor of the lagoon—an operation which involved a large group of men—was a function of the temporary relief from anger, guilt and hostility, as for one afternoon a whole group of men could work hard together. Under conditions of relative tranquility, that is when the village community had not been rent by a factional feud within a period of six or seven years, only one or two houses could be built in a year. When such feuds did occur the village would split up, new sites would be built, and subsequently, after the feud had been resolved, the factions might reunite and rebuild a partially abandoned village site. Both of these situations, the establishment of a new site under the impetus of a feud, and the reestablishment of a united village after the feud, involved more rapid house building, or the channeling of more of the available energy into this particular activity.

Although hostility, between the members of a cooperating unit, between contracting affinal kin, between parts of a village and between neighboring villages—either speaking the same or different languages—was the rule in the old culture, there were elements in the system of character formation which made the experience of anger only partially congenial. In their old system of child rearing and education, the Manus stressed the attainment of autonomy and control; the child was permitted great leeway, and even encouraged in the display of assertiveness and anger, provided he remained in control of his rage and expressed aggression. Elders and contemporaries stood ready to intervene whenever rage passed beyond the point of control, when the individual became helpless and lost his moral autonomy. The experience of anger was ambivalently regarded and the whole community

lived in a kind of nervous, tense dread, caught in a pattern of behavior in which anger must be continuously expressed and in which at any moment it might get out of control. Furthermore, adults and children both perceived the economic system, in which household ghosts goaded their human wards into more and more economic activity, as one which laid a heavy burden upon them. The children, who imitated faithfully the stance and temper of the behavior of their own or foster fathers, also imitated the repudiation of the adult system which the adults expressed even as they carried it out.

In 1946 (11), a revitalization movement was initiated among the Manus, and the entire linguistic group took part in a self-conscious attempt to transform their villages into their conception of a set of western democratic Christian communities. The old system of affinal exchanges of native valuables, which was perceived as the source of over-work, premature aging and death, and continuous morally reprehensible quarreling, was abolished; village groups moved on land—after establishing a new kind of social rapprochement with their former enemies, the land people—and an entire new order was established. Whole villages of forty or fifty houses were built in a few months; men worked together in community directed collective teams with a great display of elan and spontaneity. The new pattern of cooperation as brothers was seen as superior to the old one of reciprocal obligations evoked by anger, and through it the same individuals could channel more energy in community work. (A further development within the system then became the reliance upon community devices for evoking energy by moral appeals, expressed in long harangues at community meetings, which became less potent with over use.)

This increase in the energy available for an activity with a change in culture pattern may be contrasted with the less well documented case of the response of the Iatmul people of the Sepik River (12). Among the Iatmul, the mobilization of effort for any large endeavor requiring the cooperative heavy work of a group of men was accomplished by systems of competitive and rivalrous challenge and insult between members of different groups in the system—dual organizations, clans, initiatory age-grades, etc. Once the social context was established as a contest between any two groups, the individuals who within this context saw themselves for the time being as primarily members of A or B groups, or X or Y, became vulnerable to taunts and dares from the members of the opposing groups. In response to the taunts, large enterprises could be initiated and carried through in a series of spurts in which the phrasing of the situation—as one of great responsive anger—permitted the channeling of a large amount of energy. Great men's

houses, and magnificent war canoes were fashioned, and the village life attained a physical splendor which was outstanding in that part of New Guinea. During head hunting days, the village members handled anger—even against other members of the village—on an edge in which violence was very close; the zest of the battles of words and responses to insult seems to have been enhanced by the danger of actual violence. The closeness of the style of behavior directly related to head hunting raids to the social mechanisms through which work was done within the village was pointed up by the need for actual human heads when any major work on the men's house was undertaken.

In Iatmul child rearing, the display of assertive and often destructive anger was encouraged; children were provoked into demanding assertiveness, competed with their mothers for pieces of food, retaliated against their parents by thefts and occasional arson. That the ability to feel and display anger was felt as rewarding was indicated by the delight with which Iatmul natives witnessed quarrels and destructive behavior, as when an angry husband chopped his wife's laboriously made mosquito basket to bits. Boredom at the angry displays of others appeared only when some old widow or widower flew into so many rages that they ceased to evoke any responses at all, but the customary response to anger by uninvolved spectators was one of broad grinning delight. This contrasted sharply with the Manus displays of anger, where the spectators were grim and watchful, fearing the hated loss of control.

The disallowance of head hunting and raiding as the Iatmul were brought under Governmental control gradually reduced the intensity of the intra-village patterns of opposition and rivalry, and the amount of energy available for group building and ceremonial decreased also. While the present conditions among the Iatmul are less fully documented, it seems safe to say that the change of pattern to one in which less violence was imminent, has meant a diminution in productive energy. The men's houses have fallen into disrepair, the dwelling houses are smaller, a revitalization movement following the war failed, and village life continues at a much reduced pace.*

* Both the study of the Manus, 1928-29, and of the Iatmul, 1929-30, 1931-33, and 1938, were made after these people had been brought "under control" by the administration of the Mandated Territory of New Guinea, while the leadership was still in the hands of men who had taken part in inter- and intra-village feuds among the Manus, and head hunting raids and intra-village violence among the Iatmul. In both tribes, at the time of intensive field work, the old mechanisms for channeling energy into cooperative work were still operating, and the traditional methods of child rear-

In one case the break in the old pattern was perceived in such a way that less energy was available, in the other, the break was perceived so that more was released.

These examples suggest that any cultural patterning of activity must be scrutinized in terms of the way it is related to the existing character structure of those who engage in it, for its energy channeling properties, and that all change of pattern involves a possible alteration in the amount of energy which will be so channeled. In Birdwhistel's study (13) of the differential response in migrants from a rural county to an urban environment, between the group who had already established patterns of individualism and opportunism, and those who came from a kin dependent orientation, a marked contrast was found in the behavior of the two groups in the new environment. Those who were accustomed to a network of warm kin ties remained in a relatively low socio-economic status, while the more individualistic group climbed rapidly in the urban environment. In terms of the argument in this discussion, the relationship between the rural patterns and the urban situation acted as a stimulus to social mobility—involving a certain type of channeling of energy—in the one case and not in the other.

Thus the way in which any given pattern is able to channel available energy is testified to both by comparative materials from studies of food distribution patterns in primitive societies, like the Pilaga and the Arapesh, or an equally conspicuous contrast in the way in which an intrinsically difficult hunting pattern may be seen as zestful or distasteful, as among the Australian aborigines, described by Roheim (14) as a "libinization of the environment," and Holmberg's (15) account of the Siriona of Eastern Bolivia who have to be goaded by famine and sexual rejection into hunting activity. A wealth of experimental evidence from sociometrical studies and from the analysis of the efficiency of different types of communication networks which has been conducted at the Massachusetts Institute of Technology by Alex Bavelas (16) and his collaborators also supports the position that if the same individuals are studied, in differently patterned situations, the amount of available productive energy will differ.

In conclusion, because of the frequent confusions which arrive from different uses of the term energy, I should like to re-emphasize the difference between energy levels of individuals which are a function of food intake and

ing could be observed. The Manus was restudied intensively in 1953. The Iatmul discussion is based on reports of Mr. and Mrs. Thomas Gilliard, who made extensive photographic and behavioral records on their recent expedition to New Guinea (1953-54) in which the primary focus was upon birds.

ways in which the utilization of the food intake occurs within the body, and the subject of this discussion which is the relationship of the way in which a given activity is patterned, on the one hand, and the way in which change of pattern is perceived, and the amount of available energy which is channeled through the particular traditional or new activity pattern. I am offering this discussion as a bridge between Moreno's concept of spontaneity, studies of cultural patterning of motivation such as David McClelland's study of achievement (17) and communication theory (18), as an approach to theory of cultural change.

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PART III

SOCIOMETRIC THEORY

SOCIOMETRIC UNIVERSALIA

JIRI NEHNEVAJSA

A. INTRODUCTION

In another discussion here (SOCIOMETRY: *Decades of Growth*), we have pointed out that sociometry has been oscillating between therapy, theory and research—between specialization within the field and a blending of all these endeavors. Not dissimilar from these general currents has been the statement of purposes, or aspirations. For one, the sociometrists have engaged in a large number of case studies; but on the other hand, they have, at least implicitly—and in the case of Jacob L. Moreno quite explicitly—aspired at "Sociometric Universalia".

> "Without giving up the vision of totality by an inch, sociometry has retreated from the maximum to the minimum, to the social atoms and molecules" (1).

The fundamental postulate of spontaneous-creative behavior of men (2) has, amazingly enough, been the axis both of extreme relativism, and of universalism. Spontaneity as a "novel response" (3) is polar to "patterns", and "cultural conserves". As such, it refers to unrepeated, or even unrepeatable events (in his article, Georges Gurvitch points out quite vigorously that the exclusion of the "unrepeatable" from the structuralist-functionalist theories has indeed been one of their major weaknesses)—hence, spontaneity has a time-space bound collectivity as its referent.

Yet, at the same time, spontaneity-creativity is seen as a universally human factor even though its operational manifestations may differ relative to the time-space bound systems under study.

We feel that it is this mixture of *relativism* and *universalism,* to the exclusion of neither, imbedded in the concept of spontaneity that has made it a useful generative matrix for both the investigation of the unrepeatably unique, as well as for the growth of high order generalizations. Coupled with the notions about the "philosophy of the moment", or "philosophy of the present" (4), this Bergsonian "elan vital" partakes speculatively both from the generally human (in the sense of "nature of men") and from the situationally specific.

In this paper, we wish to discuss some of the *contemporary universal postulates* of sociometry. Their derivation has been empirico-logical; their proof heuristic.

B. Notes on Cultural Relativism

The universal evolutionary historicism of earlier writers (Tylor, Maine, Letourneau and many others) has given room, largely, in our own century to the emphasis on cultural relativism. The mono-factorial suggestions regarding the unilinearity of evolution have, indeed, been largely discredited (Boas is led to his critiques by his observations on parallelism). By 1911, Rivers (5) calls for an "analysis of the cultures and civilizations now spread over the earth's surface" which is to precede speculations about the "fundamental similarity of the workings of the human mind all over the world."

The era of investigation of cultures, their "traits", their origins (invention), and their transmission (diffusion) is initiated. At this stage, the aspiration to arrive at a generalizable body of knowledge applicable to "human beings" at large had not been given up; fuller knowledge of time-space bound cultures was merely desired. The excellent treatise of Sorokin (6) of various 19th century schools of thought gave ample evidence of the varieties of conditions producing similar cultures, and varieties of cultures stemming from rather similar conditions. At least "environmentalism" in all its form was to be discredited whenever it deals with "single factors", with "predominant traits". Psychologistic universalism was to receive severe blows as an aftermath of the mushrooming of the "instincts" (universally human) although the more modern concept of "needs" appears in no way clearer.

With Malinowski and Radcliffe-Brown, "culture" becomes a unit of analysis; to it, "characteristics", "traits", "patterns" are referred. Since, some extremists of cultural relativism have been using the classificatory concept of "culture" as an explanatory one. "Culture" does this, "culture" does that. "Culture" molds a human personality; and if a particular human "invents", or "creates", it is more often than not due to particular constellations of "cultural elements". Thus, with the aid of the "culture-concept", any event can be explained ex-post-facto-rationalized, if you wish; but it can seldom be forecasted unless the metaphysical entity of "culture" is broken down into some of its specific sectors.

It would appear then that operationalism is usefully grounded in the study of *specifics* which are always less inclusive than "culture" no matter how defined. Yet, because human behavior takes on a variety of forms, because human beings organize in a variety of ways, and into different types of collectives—does this essentially supply the evidence that a "cultural base" is the source of these differences, or that a universally human base is

modified, as to the *direction* which activities, organizations, values will take (rather than the principles, or orderliness, which underlie human behavior), by numerous levers, pressures, influences the complexity of which may fruitfully be called "culture"; although the modification of the universal base will occur to some degree (an unknown degree) under the impact of levers external to one's own "culture". We are saying that mono-cultural analysis is fundamentally not different from mono-factorial studies of evolution, or society, or man. "Culture" is as much one factor only as "environment" is; and it is, of course, as complex (and probably more so) as environment.

In specific studies, one investigates *sectors,* or *parts* of what is called culture. Yet, *culture* is a construct composite of impacts from many "cultures" (a culture is not mono-cultural); it has dimensions of the past (recollections), present (opinions, observations), and future (anticipations, expectations).

When Margaret Mead (7) criticized sociometry in her outstanding discussion for studying "closed systems" without recurrence to the "cultural context", she could have similarly criticized the students of culture for investigating closed systems while social reality necessitates the understanding that culture is heterogeneous (having elements drawn on from other societies as well as from the past, present, and future), and that some methods are needed to determine the extent of heterogeneity. And at the same time, that universally human phenomena are quite noticeable even though their specific patterning may be colored, or as we said, modified, by values which are shared by smaller than all-human collectivities.

It is, perhaps, for these and other reasons that many universalia have survived—at least implicitly. As a *method of analysis,* the Parsonian theory is, of course, universalistic (8). Sorokin's integralism is, indeed, universalistic (9) Moreno's theory of spontaneity-creativity is universalistic (10). As for the content, concepts of "needs", "roles", "statuses"—and many others, are universalistic. In sociometric work, the existence of a *depth-structure* underneath the formally organized social surface is universalistic. And, of course, the concepts of *spontaneity-creativity* are seen universally human. Like the culturologists, the sociometrists have done research in *specifics* (and they have been fruitfully relativist by defining their space-time bound collectivities); like the culturologists, they have aspired at developing generalizations applicable to human beings at large.

Generalizations of the highest order will probably always have to remain speculative in nature. Preoccupation with such generalizations is as important an effort as preoccupation with painstaking confirming (and non-

confirming) of portions of the generalizations. The utility of generalizations is a function not of their inherent "truthfulness", but of what they can, or do, lead to. The Universe of Einstein is not "truer" than the Universe of Newton; but it makes dealing with the Universe easier.

No scientist will ever deny that, ultimately, science aims at a body of *universals,* generalizations applicable to the whole. Some will argue that inductive methods alone will provide the key to such general statements; others will argue that imaginativeness is necessary on top, and beyond, inductive findings. Few will be supporters of purely deductive procedures.

In sociometric endeavors, we find both scientific rigor associated with painstaking research as well as imaginativeness of large-scale visions—a theory of society climaxed by a set of universals. Few will accept such universals as "true"; but few can afford to ignore them as either potentially "true" or as breeding grounds of hypotheses for inductive verification.

C. Sociometric Universals

Whether or not the time for generalizations in sociometry has come, several universalia have been already outlined by Moreno. These postulates have been labelled "laws" and "hypotheses" somewhat alternatively by their author. They have been proven heuristically: no contrary findings have been reported as yet and the findings up-to-date seem in line with the universalia.

The quest for universals is thus renewed (its utility *at this time* may be open to argument; but its *desirability* at some stage is certainly unquestioned) thanks to sociometry. Two basic postulates have been announced by Moreno, and accepted by the sociometrists. One of these is the postulate of the "spontaneous man". The s-factor is manifest in the pre-socialization stage (first universe of the infant) (11); it is the matrix to which creativity (c-factor) is linked (12)—creativity as an energ sui generis, or as "balanced spontaneity" (13). The second postulate asserts the existence of a *depth-dimension,* a societal structure the tissue of which is composed of affective relationships, distributed along the continuum of affection—through neutrality—to aversion (14). This structure, different from anything resembling the construct of primary groups in Cooley though more like the use of the concept of "primary groups" in Faris (15), functions underneath the formal social fabric—influencing it, and influenced thereby.

That both postulates are meant to be universalistic, and, are universalistic, needs not be emphasized. "Spontaneity", as a generally human quality, may be but a name for a process, but a useful name indeed. (It may also designate a reality intuitively discovered.) It helps explain the process of

innovation, change—the formation of novel responses to old stimuli (situations), or novel responses to new stimuli. Spontaneity designates the ability of individuals to "rise to the occasion"; their willingness and capacity to experiment, to modify, to alter, to change. As such it is a universalistic hypothesis for all men are assumed to have some degree of spontaneity. The link of spontaneity to creativity and of cultural conserves to both is equally universalistic.

The hypothesis regarding affection-aversion, or associative-dissociative processes (Leopold von Wiese), is similarly universal. Attractions and repulsions seem to be occurring in all cultures, and at all times—manifestly or implicitly with the latter ones measurable validly with the rise of sociometric methods.

Several laws, or hypotheses, have been proposed by Moreno (who employs both the term "laws" and "hypotheses" somewhat alternately (16). These follow from the two basic postulates—and are supported, at this time, by a considerable body of empirical findings.

The *Sociogenetic Law* asserts that highest forms of group organization have evolved from simple ones. This is, of course, not dissimilar from the notions of Toennies, Durkheim, and Simmel (and other writers). But in sociometry, the meaning of this evolutionary process has become much clearer, more empirical and less speculative. Observations of infants have led to the differentiation between various developmental stages through which they pass, that of organic isolation, to that of horizontal differentiation, and finally, to vertical differentiation (17).

Moreno's graphs indicating the frequency of various sociometric configurations by age-groups (18) should serve as convincing evidence to the point. Dyadic relations are formed early in the stage of vertical differentiation, with the triangular and even more complex patterns emerging later on. Cleavages by sex, and race, occur only later—to suggest clearly the formative nature of the early stages. Factions, cliques, and sub-groups will break the human group in a variety of ways depending on the purposes of the association (in sociometric testing, these "purposes" are defined as criteria of a test).

Similarly, the transition is marked by a gradual differentiation between *social roles* (to which social expectations are attached, and which delimit the duties, privileges, rights, and obligations—to go along with Linton and others) and *psychosomatic roles*.

The *Socio-Dynamic Law* states that the income of choices (affective retrojective relations of an individual) is unevenly distributed among mem-

bers of a collectivity regardless of the size of the group or its kind. It points out that groups are stratified with respect to relevant sociometric criteria. No researcher, to our knowledge, has produced evidence to the contrary. Hence, we speak today of "sociometric status", "choice status", "choice-rejection status" of individuals. Sociometric "equality" has yet to be discovered. The socio-dynamic law further qualifies the expectation of choice income when the number of permissible choices is increased. The *socio-dynamic effect,* as this aspect of the law has been called, postulates that overchosen individuals will remain overchosen, and that they will even accumulate a *surplus* of choices if the number of permitted choices were increased.

The *Socio-Dynamic Law* has the same meaning when employed with reference to groups. It asserts that groups are differentially attractive to out-group members—that is, some groups are seen highly attractive and others less so.

The postulates of the socio-dynamic law, of course, are applicable only when *vertical differentiation* occurs, and the stage of "vertical" differentiation describes clearly nothing else but the phenomenon of uneveness of the distribution of choices. The socio-dynamic law pertains to groupings that, in terms of the socio-genetic postulate, are at a higher stage of evolution.

The *Law of Social Gravitation* states that, with constant facilities of communication, and constant physical distance between communities, people from one community will move toward people of another community in direct proportion to the amount of attraction given and received; and in inverse proportion to the rejections. Thus attractions are seen as conducive to "movement" towards, while rejections to "movement" away from; the notions of Emory Bogardus regarding "social distance" are here reexpressed; Homans has discussed amply the relationship between liking and contact.

The *Hypothesis of the Interpersonal, Socioemotional* or *Sociometric Network* states that there are beneath the everflowing and everchanging social currents more or less permament structures, the live tracks of communication. It is through these channels that people affect or disintegrate one another. The cause of their existence is the economic principle of producing the greatest effect with the least effort (11).

D. Validity of the Universalia

Are the universalistic statements in sociometry but verbal constructs to which no social reality corresponds? We believe this not to be the case. Validity, as correspondence between data (or statements about data) and

human behavior has never been clearly established. Yet, no data exists, to our knowledge, that would require our questioning of validity of these universals. Research studies of evolution of groups, or of formation of sociometric configurations, and their changes over time, have thus far fully supported the *socio-genetic law* in its general form; similarly, research in a great variety of groups composed of the most different populations (homogeneous with regard to age, sex, race; heterogeneous with regard to age, sex, race and so on)—and in a considerable variety of cultures and subcultures in the United States, in France, Germany, Italy, Puerto Rico, Peru, Mexico, Costa Rica, and probably many others; subcultures such as schools, the industry, the military, the community)—has supported the *socio-dynamic law*. While individuals aim at maximizing their socio-emotional adjustment, and try to choose persons who also choose them (choosing on the high-tele-range of Paul Deutschberger), when tested on leadership criteria, the subjects do overchoose the "leaders", the "sociometric stars" although they themselves do not expect to be chosen by the leaders. This then lends support to the concept of *socio-dynamic effect*. In configurations which Jennings had called "psyche-groups" (19), the socio-dynamic effect may not apply to the same degree because the choosing process is designed to maximize homogeneity of the group; individuals are drawn into the groupings because of their "fitness" into the group climate. But in the "socio-groups" which are oriented toward collective criteria (and thus toward performance of tasks), the socio-dynamic effect doubtlessly occurs.

E. Utility of the Universalia

The universalia are useful in two ways (at least): once, in as much as they are valid; and secondly, in as much as they are to be looked upon as stimulating, and provocative, hypotheses about universally human behavior.

As valid generalizations (and it will be profitable to consider them valid until they can be proven invalid), the universals provide an analytic frame of reference which cuts across various cultures, societies, and even—times.

As hypotheses, the universalia can generate numerous operational hypotheses which are then testable with all the possible scientific rigor. They give a direction to hypotheses—testing on one hand; and on the other hand, testing is to validify the universalia.

Contrary to many classical universals, the sociometric generalizations are in no way metaphysical. The concepts such as "needs" or "instincts" have to be further delimited to be useful at all (and this has never been done). But the sociometric generalizations deal with the operational manifes-

tations of socio-emotional relations—and these manifestations are choice-processes whose referents are *particular*, and *well defined* ways of associating of human beings.

F. The Universalia and Relativism

The sociometric universalia have been postulated as generally valid principles. But none of the laws, or hypotheses, designates the relevant parameters. Thus, culture by culture, society by society, group by group, and from time to time, the empirical content of each universal may vary. Thus cultural values attached to the socialization process of the individual may give a somewhat different quantitative meaning to the socio-genetic law. The law is assumed valid regardless of such values—but under different conditions (and/or at different times) it is quite possible that the process is speeded up, or slowed down. Thus, from culture to culture, individuals may reach the stage of vertical differentiation at somewhat different times; or, more complex configurations (triangles, squares, and such) may develop earlier or later.

Similarly, the degree to which the socio-dynamic effect occurs may vary with different cultures. Also, the distribution of choices may be more-or-less uneven, though the socio-dynamic law asserts that it will *always be uneven* (yet, it does not specify *how* uneven).

We may now make a few concluding remarks:

1. The universalia are generally applicable statements—hence, they are universal to that extent.

2. The specific metrics of the universalia are affected by a set of (as yet unknown) factors, such as cultural values, social norms, group goals, and so on. In this respect, the universalia are *relative* to culture, society, groups, times.

3. No research project has yet led to conclusions which would cast a shadow of doubt upon these theoretical generalizations. In fact, research findings have supported Moreno's postulates. The usefulness of these candidate laws in sociological and social psychological work is, of course, somewhat impaired by the fact that the exact relationships have not been stated. The laws, while presently acceptable in their current form, need reformulation so that they may become predictive rather than descriptive.

The universalia can be seen as *general models* of behavior whose parameters are functions of the time-space-culture context. They are general as principles of human behavior, but relative as to direction (in this case *de-*

gree)—a statement which we made at the outset regarding cultural relativism, and the usefulness of its extreme position.

Along these lines, we believe that no basic conflict needs exist between universalism and relativism. Relativism leading to empirical ascertainment of specifics should provide merely the refinements for bold generalizations—occasionally supplying data for discarding such generalizations, occasionally supplying evidence for upholding the generalizations. But to assume that research in specifics alone would *ever* lead to high order generalizations without *the courage to speculate* on the part of the scientist is paramount to the belief that "society is but the sum of its individuals"—for it means to believe that somehow, someday, the collection of innumerable researches will *of itself* fall into a pattern, and that the order of the universe is nothing but such an aggregate of specific facts.

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SOCIOMETRY'S CONTRIBUTION TO OBJECTIVITY IN THE SOCIAL SCIENCES

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I

A philosopher some years ago ridiculed social scientists for having "set themselves the paradoxical ambition to be objective about the subjective aspects of life." Like so many paradoxes that have puzzled philosophers through the ages, this one also turned out to reside in the assumptions and the semantics of the philosophers rather than in nature. The social sciences did emerge in an attempt to be objective (or at least *more* objective) about interpersonal relations and social phenomena—a field which philosophers have usually regarded as intrinsically "subjective." In this connection social scientists also ventured to inquire as to just where, by whom, and according to what criterion, the line separating the objective from the subjective was to be drawn.

The answer of physical scientists to that question had already revolutionized thinking in the natural sciences. For scientists regard a phenomenon as objective if and to the degree that it can be communicated and hence corroborated by other qualified observers. Conversely, the subjective aspects of life are those which cannot yet be so communicated and verified. This view destroyed completely the traditional notion that subjectivity or objectivity are inherent and intrinsic characteristics of phenomena. It substituted the notion that these terms designate rather degrees of interpersonal inter-communicativity of experience. This idea was revolutionary in its implications, especially for the social sciences. For it postulated that, given adequate technology, any experience or phenomenon whatsoever might *become* objective, and hence a legitimate object of study according to the accepted methods of natural science.

Sociometry developed as a major movement in the social sciences by addressing itself to the task of objectifying some of the more recondite and fundamental of the areas hitherto regarded as beyond the reach of the methods of objective science. Thus sociometry proceeded to deal objectively with the so-called "invisible" attractions and repulsions, emotional currents and tensions between individuals and groups, which determine in fundamental ways people's overt social behavior. These currents and tensions also underly much physical and mental illness, maladjustment, and unhappiness. By confining themselves chiefly to primary group relations and small groups, sociometrists were able to design simple verbal tests revealing the direction and intensity of these currents, and to chart the results in simple diagrams, which in turn lent themselves to corroboration by other investigators, and which further permitted prediction and validation against generally recognized objective criteria.

The phenomenal development of sociometry through these techniques is not surprising. After all, the central problem of all science is to separate out from the multitude of personal impressions, feelings, intuitions, hunches, revelations, and so forth, these views of the world which are subject to corroboration by other qualified observers, and which make possible prediction of future events. The methods of sociometry aim at these objectives in the field of group behavior. In a short period of two decades it has established itself as one of the most promising approaches to certain age-long problems of social science.

II

One of the essentials of the sociometric approach was to look first at the *facts* of the *existence* of likes and dislikes, and to leave out, for the time being, at least, certain questions with which the facts frequently are confused, namely, whether they *ought* to be as they are. Both are proper subjects of study and action, but they are not the same. Yet the viewpoint is surprisingly common that only things that ***ought to be*** are facts; things disapproved (*i.e.*, which ought not to be), it is implied, are *not* facts, or at least the latter must not be studied and reported with the same objectivity as the facts that are approved. The phenomenon is a common semantic disorder and suggests the survival of a form of sympathetic magic, *i.e.*, by refusing to consider as facts certain disapproved facts, they cease to be facts.

For example, several studies have shown that in a simple sociometric test, positive choices (likes) are very much more frequent than negative

choices (dislikes). There is nothing *prima facie* wrong with such a finding. Other data, however, indicate that to some extent the difference is due to the belief that since according to some moralistic injunctions, we ought not dislike anyone, therefore we must not admit even to ourselves that we nevertheless do dislike some associates. I have previously reported[1] on cases of this kind, in which the participants in a sociometric test are inhibited from stating even anonymously the fact that they have negative feelings toward some members of a given group. Consider the following illustrations:

In one conventional sociometric study of a girl's dormitory the following question was asked: "List in order the three persons now living in this house whom you least desire for roommate next year if you were to live in this house." Among the comments received in reply to this question were the following:

"I have a very uneasy feeling about this whole questionnaire, just filling it out in the 'interest of science' does not seems to justify it to me—I really don't know why I'm doing it. This analysis of friends is entirely contrary to what I have been taught in home and at church. I don't like to admit even to myself that there are people I definitely dislike—much less set their names down for other people to see."

Another girl returned the blank unfilled with the following comment:

"I am sorry that I cannot cooperate by filling out this questionnaire, but for several reasons, I do not feel right in doing so. I think it very unfair to deliberately dig out of my mind three people that I don't like especially. No matter whether they will know or not, I will know who they are, and would always feel as if I were accusing them unjustly and without good reason."

A third comment was as follows:

"I think questions like this encourage intolerance. We should be urged to get along with people rather than try to avoid them."[2]

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[1] G. Lundberg and Virginia Beazley, "Consciousness of Kind in a College Population", SOCIOMETRY, Vol. 11 (February-May, 1948), pp. 59-74. Also, G. Lundberg, Virginia Beazley Hertzler, and Lenore Dickson, "Attraction Patterns in a University", SOCIOMETRY, Vol. 12 (February-August, 1949), pp. 158-69.

[2] It is not known to what extent the inhibitions illustrated above are prevalent in different types of groups. O. C. Smucker, *A Sociographic Study of Friendship Patterns on a College Campus* (Unpublished Ph.D. thesis, Ohio State University, 1946), reports that in his study three times as many positive as negative choices were made (p. 123). One-third of those who participated in his study made no negative choices (p. 124). In our study of a large high school, about one-fourth (23.5 per cent) made no negative choices. (G. Lundberg and Lenore Dickson, "Inter-Ethnic Relations in a High School

We see in the above reactions a reluctance to recognize and to admit the existence of feelings of dislike and repulsion on ethical grounds. That is, objective recognition of our dislikes of people arouses guilt feelings. There is a tendency, therefore, to suppress these feelings into sub-verbal levels of feeling. Much psychotherapy undoubtedly consists of trying to objectify these suppressed dislikes by bringing them to the verbal level where they can be rationally dealt with.

III

To the extent that sociometry has developed techniques for overcoming inhibitions of the type described above certain highly important "subjective" data have become available for scientific study. Absence of such relevant data frustrates adequate explanation and prediction of behavior basically conditioned by these subjective states. Serious as this inhibition may be on the personal and therapeutic level, it becomes even more serious when projected by social scientists into the field of social science itself. For on the scientific level such inhibitions or ethical considerations may prevent the formulation of the very hypotheses and the very questions that are needed to make investigation fruitful. Examples of this phenomenon are readily available from the field of so-called "race relations" regarding which social science studies have hitherto for the most part been notoriously lacking in objectivity. As one ex-president of the American Sociological Society has said: "In the field of majority-minority groups, we have messed around trying to rationalize rather than understand conflict and intolerance. . . . Most people are afraid to go at the problems honestly because they fear the Jews and the Negroes wouldn't like what they find out."[3]

Sociometrists have contributed to the alleviation of this problem by directing attention to attraction and repulsion as a very general and natural phenomenon present in nearly all groups, and one that must be studied in the manner of other natural phenomena. This does not mean that sociometrists are in any sense less concerned with the injustices suffered by the

Population", *American Journal of Sociology,* Vol. 58 (July, 1952).) Our study of a University women's dormitory indicates much less inhibition (or greater actual incidence of dislikes), since only one-seventh of those who participated made no negative choices. (Lundberg, Hertzler, and Dickson, *op. cit.,* pp. 164-65.) However, this result was partly due to a follow-up letter dealing specifically with the inhibition in question.

[3] Kimball Young in Howard Odum, *American Sociology,* New York: Longmans, Green and Company, 1951, p. 222. See also the report of Robin Williams, Jr., *The Reduction of Intergroup Tensions,* Social Science Research Council, Bulletin 57 (1947), p. 105.

Negro and other minority groups. It indicates rather the desire of sociometrists as scientists for a more effective approach. They recognize that while a great deal of the motivation of scientists doubtless comes from their desire to *do something about* the unfortunate conditions of men, *effective* action can come only if we first understand the nature of the problem we wish to solve.

An excellent example of the sociometric approach in matters of this kind is found in J. L. Moreno's discussion of the "saturation point"[4] in inter-class and inter-group relations. Dr. Moreno points out that a homogeneous population may be homogeneous in a certain respect without being aware of it as a psychological factor in community relations. For example, a population consisting of many nationalities of the white race, heterogeneous in many respects, suddenly begins to recognize itself as belonging together (in an ethnocentric sense) only when a group of colored people move into the community. It is, therefore, important to recognize that the same group may be homogeneous in some respects and heterogeneous in others, and that to understand the new situation in the community, the sociometric structure of each group must be taken into consideration.

In chemistry we call a solution saturated when it can no longer absorb under given conditions additional quantities of a given substance. For example, a quantity of air, at a given temperature, is said to be saturated when it can absorb no more water vapor. Similarly there is a sociometric point of saturation of a specific homogeneous group for a specific other contrasting group under given conditions. In the case of a chemical solution its point of saturation for a certain substance may change for instance with the fall or rise of temperature. In the case of social groups the point of saturation may change with the organization of the interrelated groups. Dr. Moreno illustrates the phenomenon as follows:

A group of Negroes migrates into a white community. The situation arising can be looked at from three angles: the organization of the white population, the organization of the incoming Negro group, and the psycho-

[4] Joan Criswell ("The Saturation Point as a Sociometric Concept", SOCIOMETRY, Vol. 5 (May, 1942), pp. 146-50) has pointed out some differences in the meaning of this term as used in chemistry and in sociometry. We are here using the term merely as a convenient designation of the point in group relations beyond which intolerable tensions or overt violence ensues. The point could, of course, be defined as any point of undesired tension. See also E. L. Hartley and Alexander Mintz, "A Technique for the Study of the Dynamics of the Racial Saturation Point", SOCIOMETRY, Vol. 9 (February, 1946), pp. 14-20.

logical currents developing from their interaction. Up to a certain limit the influx of Negroes may not produce any apparent discord. [The criterion is not purely or even necessarily primarily quantitative. G.L.] But as soon as such a limit is passed various disturbances begin. Before the immigration of the Negro the white community enjoyed a certain degree of economic prosperity. A great part of its members desired more leisure at the same time. The corresponding Negro group, being in economic misery, were able to satisfy a double want of the white population, cheap labor and more leisure, with the accompanying distinction of the white men and women of being regarded and regarding themselves as superior. The desire for status had been satisfied until then by the fact that a part of the white population had served as domestics and common laborers. The Negro group through their arrival contributed toward the reduction of these differences within the white population itself, and thus increased its homogeneity. As long as only this status relationship entered into the picture, considerable mutual good feelings developed between the two races. But the problem was far from being so simple. The sexual factor was another feature affecting the organization in the white community. The number of men was fewer than the number of women. Italian immigrants had migrated into this community half a century before and their traits, biological and cultural, dominated the population characteristics. On the other hand the Negro group was sufficiently intermixed with the white to become attractive at least to some members of the white population and to be attracted by them. "This picture of a community is certainly becoming full reality in many other towns of the United States today, whether the immigrants are Negroes, Italians, Spaniards, or whatever. . . . These sexual affinities and disaffinities produce an effect upon the organization of both groups, the sexual currents drawing them together and the inter-racial currents drawing them apart."[5]

Dr. Moreno goes on to discuss many other aspects of this situation with respect to the saturation point for leader-individuals and the general implications of this inner structure of groups *in relation to* the structure of other groups in determining the saturation point, *i.e.*, the degree to which minority groups can be absorbed under given conditions in a given community. It is precisely this type of analysis which has been wanting in race and minority studies. The problem has been approached instead in a moralistic

[5] J. L. Moreno, *Who Shall Survive? A New Approach to the Problem of Human Interrelations,* Washington, D. C.: Nervous and Mental Disease Publishing Co., 1934, pp. 224-26. Also in Second Edition, Beacon, New York: Beacon House, Inc., 1953, pp. 407-10. This and the preceding paragraph are a paraphrase of Dr. Moreno's text.

spirit eager to assess, praise, and blame for the existing state of affairs, and thus making what purports to be a scientific study merely a type of exhortation for certain people or groups to think, feel, and behave differently than they are in fact motivated to behave by the existing status situation. *Situation* here means the internal structure of the groups *in social relation to each other,* as well as the more commonly studied socio-economic, geographic, ethnic, religious, and age-sex factors. The techniques for studying the latter group of conditions are well developed, and a multitude of intercorrelations among them have been computed. Sociometry called attention to a neglected and crucial factor, namely, the interpersonal and intergroup structure of the individuals and the groups themselves.

IV

The lack of objectivity and failure to consider fundamental sociometric conditions in the sociological study of emotionally charged problems may be further illustrated by the reaction aroused even by the proposal of quite detached hypotheses bearing on the subject. For example, several years ago I proposed a number of hypotheses regarding what *may be* relatively general sociometric conditions under which inter-ethnic hostilities are likely to develop, at least in contemporary American communities. The hypotheses were as follows:

(a) Conspicuous (*i.e.,* more than usual) ethnocentrism on the part of any group in a community is likely to incur a certain hostility on the part of other groups regardless of particular racial, religious, or other characteristics.

(b) Political influence out of all proportion to their numbers, especially when exercised in ways regarded by the rest of the community as contrary to the community or national interest is likely to incur hostility toward the minority group which for one reason or another happens to be in a position to exert such disproportionate influence.

(c) Conspicuous allegiance to any foreign culture, cult, religion, or political group or other connection commanding prior or higher obligation than their allegiance to the nation in which they live and enjoy citizenship is likely to be regarded with hostility by the in-group, regardless of other characteristics of minority or majority groups.

(d) Great activity on behalf of such foreign and alien groups is likely to be resented by native and other groups. Money raising campaigns and other conspicuous agitation is likely to arouse widespread hostility on the

part of the public which feels imposed upon by those coercive intrusions, regardless of how worthy the cause.

(e) Monopoly or great concentration on the part of any minority in any profession or occupation of high status is likely to be resented by other groups. The legitimacy of such objection may be debatable but there is no question about the offensiveness of such concentration to the rest of the community. When the minority group in question is also the object of hostility on one or more of the other counts here enumerated the unwisdom of a minority's concentration in strategic occupations is a proper subject for dispassionate, rational consideration, especially on the part of the minority concerned.

(f) Attempts on the part of *any* group to secure for itself to a conspicuous degree special privileges and immunities are likely, in the United States, at least, to incur hostility on this ground. Organizations aiming to suppress criticism of themselves by means of censorship of movies, books, and other works of art are of this character.

Note that all of these hpyotheses are couched in terms of *degrees* and that only when they exist to a certain degree (Moreno's saturation point) do they produce a so-called "minority" or "race" problem. Note also that these hypotheses suggest that when these conditions are present to the significant or critical degree, tension or conflict is likely to appear regardless of what particular groups are involved. *These conditions* rather than the moral turpitude of some people, groups, nationalities, classes, and races as compared with others become from this point of view the important subject of scientific study. Failure to realize this fact is precisely what is wanting in the overwhelming majority of current studies of the subject. Let us consider, as examples, some of the reactions that have been forthcoming even in scientific and sociological circles regarding the above hypotheses.

First of all there are the critics who, while admitting the validity of the above analysis as a whole, object to it because of its possible adverse effects on current issues in which the critics admittedly have prior commitments of a non-scientific character, *i.e.*, ethical, emotional, or political preferences. With this type of objection we are not here primarily concerned, except to note that as ethical preferences these objections do the critics much credit as citizens and as human beings, if not as scientists. For example, the editor of a leading journal of opinion commented on my position as a whole as follows:

> "The argument in your article is so reasonable and accurate that it serves up to a point, as a valuable corrective. And yet I find it un-

realistic—almost *as if written in a social vacuum*. . . . The only way . . . is to *lean over backwards* in such cases. . . . " [Italics mine.]

The objection to a sociological analysis "in a social vacuum" is of special interest in the present connection because it refers to holding constant or excluding certain biasing factors (in this case the prejudice one feels *in favor of*, for example, the Negro). A "realistic" appraisal, it is implied, should *include* these biases. This view admirably illustrates the point of my present analysis. One might object on exactly the same grounds and according to exactly the same logic, to the fact that the law of falling bodies deliberately, avowedly, and without apology, is formulated to describe how bodies fall *in a vacuum*. The law ruthlessly rules out all kinds of common sense feelings that large, heavy bodies "should" fall faster than small, light bodies, that it is "reasonable," "just," "right," "decent," etc., that this should be so. The justification for this procedure in physics is regarded as obvious. But in sociology, an analysis "in a vacuum" (in this case merely a proposal to hold constant one's prejudices for or against certain current minorities) is deemed "unrealistic" (in a derogatory sense), and it is actually contended that in a scientific analysis of certain minority problems, we should "lean over backwards" in order that our findings may coincide with our prejudices regarding what is socially desirable!

The doctrine that in the social sciences the investigator must "lean over backwards" so that his findings will support whatever state of affairs he favors is, of course, a clear defense of a major scientific immorality, namely, deliberately "doctoring" one's experiment or other study to produce a desired *extra-scientific*[6] result. Yet this doctrine, in various disguised forms, is widely defended in the social sciences.[7]

What constitutes "leaning over backwards" in any given case is, of course, entirely relative to some *stipulated* norm. The physicist is not obliged to adopt a theoretically perfect vacuum as a constant condition in

[6] The only "desired result" of scientific work is verifiable confirmation or disconfirmation of hypotheses. All other "desired results" are extra-scientific.

[7] See G. Lundberg, "Alleged Obstacles to Social Science", *Scientific Monthly*, Vol. 70 (May, 1950), pp. 299-305; also "Can Science Validate Ethics?" *Bulletin of the American Association of University Professors*, Vol. 36 (Summer, 1950), pp. 262-75; also S. A. Rice, "Statistical Conceptions in the Soviet Union Examined from Generally Accepted Viewpoints", *The Review of Economics and Statistics*, Vol. 3 (February, 1952), pp. 82-6; also *Report of the Special Committee to Investigate Tax Exempt Foundations and Comparable Organizations*, House of Representatives, 83rd Congress, 2nd Session, on House Resolution 217 (Washington, D. C.: Government Printing Office, 1954), pp. 60, 66, 72, 88-9.

which to standardize and generalize the law of falling bodies. Any other set of conditions would be permissible, provided they were rigorously *stipulated* and *constant*. Likewise, the sociologist can take, if he chooses, any desired definition of discrimination against, for example, ethnic minorities. Should minorities have *merely* equal treatment? It is not a scientific question. There are organizations which say "no," and there are sociologists who support them. They reason that already we have special classes—children, the aged, and the handicapped—who have and should have special consideration and special privileges, because they also suffer special handicaps. If the community at large also takes this view, there is no issue—except, when these classes discover that their very identification as a special, in some respects privileged, class, itself becomes the basis for certain discriminations against them.

Scientists do not insist on *any particular* definition of "discrimination," but, for a particular study, at least, they must insist upon *some particular and constant* definition. Does admission of certain races or ethnic minorities to private colleges, private housing projects, private clubs, etc., etc., in numbers proportionate to their number in the general population constitute equal treatment or discrimination? It is not a scientific question at all. It is a question of definition, and the scientist can proceed with his work under this or some other definition, but it must be *stipulated* and it must be held *constant*. In this paper we have suggested that a more profitable definition *for certain practical purposes* would be in terms of *the saturation point*. But there is no scientific canon that dictates this or any other particular definition. Utility for the problem at hand is the practical consideration.

Failure to recognize the (ethically) arbitrary character of scientific definitions and more especially the mischief of using the same term with different meanings within the same discourse is responsible for much confusion in sociological discussion. For example, one might think that within the ordinary meaning of the term as applied in current discussions of minority discrimination, a test of discrimination would be whether or not the members of a minority suffer differential behavior of a type recognized as disadvantageous. Consider, for example, the following news report:

> "The grand jury [Los Angeles] made up its mind about the question of the telephone operators, declared that the Board has 'condoned' discrimination against 'colored, Jewish, Oriental applicants, *and applicants of middle age.*'"[8] [Italics mine.]

Now it would appear that if the word discrimination is to have a single

[8] *Time Magazine* (February 18, 1952), p. 67.

constant meaning of the type which is required of scientific terms, then the above item reports discrimination against *four* classes of applicants for a certain type of employment. But such a view is far from unanimous among current social scientists. A substantial number will insist that the behavior reported above constitutes discrimination in the case of the colored, the Jewish, and the Oriental applicants but definitely not against the middle-aged. The latter it is asserted is neither discrimination nor a minority problem. Clearly, before we can proceed with any scientific study of the situation in question we must at least insist that those who contend that mere equality of treatment is not a proper criterion of absence of discrimination must at least communicate to us in some objective fashion what that criterion is to be. Until such a criterion is forthcoming there will doubtless be some suspicion that what actually underlies the difference in meaning of the word discrimination as currently used is the fact that *discrimination is taken to mean only that discrimination of which the speaker disapproves.*

I am not here insisting on any particular definition of the word. But whatever meaning is desired *must be specified objectively.* Whether this or some other definition would be more profitable in yielding the kind of scientific knowledge we want from scientific studies of the phenomenon of minority discrimination is, of course, a separate and a practical question.

There is a curious tendency prevalent among social scientists to regard scientific hypotheses and laws regarding social behavior as *arguments* for or against particular states of affairs in terms of which the hypotheses happen to be stated. Not even the rankest amateur in physical science would make any such assumption. Thus, the hypotheses given above have been denounced as "familiar arguments against the integration of different racial and cultural groups into a single (moral) social order." Clearly, this critic regards scientific inquiry on this subject, or even the formulation of hypotheses of the above type, as an *argument against* a state of affairs to which he is ethically opposed, rather than as a completely amoral procedure for arriving at conclusions of the "if . . . then" type, with stated degrees of probability. The critic obviously considers it the proper business of scientists, *qua* scientists, to *advocate* "the integration of different racial and cultural groups into a single (moral) social order." He goes on to say: "The legalistic-moralistic premises to which most of us have prior emotional commitments represent ends not means." Alas, the sole end of *scientific* investigation *per se* is the confirmation *or* refutation of hypotheses. Accordingly, the *scientist* who (as a citizen) has moralistic preference for "a single (moral) social order" in which there are no classes or minorities (or at least no preju-

dice and discrimination among them), will come (if he is really a scientist) to precisely the same conclusions regarding the above hypotheses as will the scientist who does not have these moral preferences. *Science* just happens to be that kind of an enterprise.

As a concrete illustration of the tendency in current social science to confuse the formulation of hypotheses or scientific laws with the advocacy of a state of affairs described by these generalizations, consider the reaction of the same critic to hypothesis No. 5 as given above. He says: "Concentration of any minority in an occupation of high status may increase the hostility towards it. But after all in a competitive society, where there are no 'Commissars' to assign people to specific occupations, how can this be avoided?" This is like objecting to the law of gravity by asking how the tendency of water to run downhill (which sometimes causes floods and other disasters), can be "avoided." Both questions are entirely proper subjects for further scientific inquiry and certainly proper subjects for engineers and social workers and educators to tackle if the community so desires. Far from objecting to the relevant scientific laws that bear on their problems, they should realize that scientific knowledge of all kinds regarding the conditions that give rise to the hostility or floods are very valuable tools for the achievement of the ends sought. In short, whether the kind of hostility here under consideration can be avoided or not, I am sure it would be valuable to know whether and to what degree the given hypothesis is true. Any minority (or majority) which disapproves of whatever state of affairs is shown to exist may then rationally decide what if anything they wish to do. They may decide to reduce their concentration in a given occupation, or they may decide to put up with the hostility which it evokes. Actually they will probably adopt a policy which they and the community find mutually tolerable. This *optimum* rather than the saturation point may be the goal to be sought.

V

So far we have been concerned with more specific contributions of sociometry in objectifying the study of inter-personal and inter-group relations. These contributions are highly valuable because of the light they have thrown on ever-present problems of group conflict, race relations, and other practical matters. These concrete applications, however, also have implications for the more general and crucial questions of the relationship of science, and especially the social sciences, to ethics. We turn now to a brief consideration of the latter question.

We have illustrated above the difficulty encountered in some sociometric

studies owing to the reluctance on the part of some participants to react freely and spontaneously with respect to their negative or repulsion attitudes. When attitudes of this kind also influence the scientific investigator, the result may be a subtle and far-reaching corrupting effect on the more abstract level of scientific generalization. There is still a widespread belief that while it is the proper business of physical scientists merely to investigate whether the facts support or refute hypotheses, it is the business of social scientists to *modify the facts* so that they support hypotheses which the scientist thinks *should* be true. A slight variation of this amazing doctrine is the contention that the social sciences should primarily concern themselves with hypotheses and data which support only approved, desired, and ethically laudable generalizations. This is the familiar problem of science and ethics which I have discussed elsewhere at some length.[9] For our present purpose a single striking illustration from a distinguished scholar in the field of jurisprudence will suffice:

> "For if the physical sciences have for their function to discover what is, the social sciences have for theirs to discover what ought to be and how to bring it about. If newly observed phenomena do not accord with the physicist's hypothesis, he must reject it and frame a new one. If particular facts of human conduct do not accord with some formula of justice or politics or law, the trouble may be with these facts, not with the formula, and conduct may have to be shaped to what-ought-to-be, not formulas of what-ought-to-be shaped to facts of conduct which controvert the jural postulates of civilization. What-ought-to-be has no place in physical science. It has first place in the social sciences."[10]

The above statement deserves praise for being perfectly clear and explicit and even emphatic on an issue on which many social scientists who are

[9] "Can Science Validate Ethics?" *Bulletin of the American Association of University Professors,* Vol. 36 (Summer, 1950), pp. 262-75; "Science, Scientists, and Values", *Social Forces,* Vol. 30 (May, 1952), pp. 373-79; "The Senate Ponders Social Science", *Scientific Monthly,* Vol. 64 (May, 1947), pp. 397-411; "Alleged Obstacles to Social Science", *Scientific Monthly,* Vol. 70 (May, 1950), pp. 299-305.

[10] Roscoe Pound, *Contemporary Juristic Theory,* Claremont, California: Pomona College, 1940, p. 36. Due allowance should be made for the fact that this statement appears in a series of popular lectures, which often do not permit the reservations and elaborations the author might otherwise make. However, Dean Pound has consistently held, correctly it seems to me, that jurisprudence and the practice of law are forms of social engineering (social work) rather than science. Apparently he takes the view that the social sciences are like jurisprudence in this respect. That is, he confuses social science and social work, which in my opinion stand in the same relation to each other as, for example, physics stands to electrical engineering, or biology to medical practice.

in fundamental agreement with the statement are nevertheless reluctant to state so explicitly. The principal point to be made regarding the quoted statement is that if one wishes to take this position there can be no excuse for confusing students and hopelessly obfuscating discussion by continuing to use the word *science* to designate two methods and two resulting types of knowledge fundamentally and crucially different. Both types of activity are valuable. I have no objection to a social worker's comparison of (a) existing states of affairs and (b) some standard—his own hopes and ideals, the American Creed, the decalogue, "the jural postulates of civilization," etc., etc. It is certainly a proper activity for an engineer to study and report on the disparity between an existing and a desired state of affairs. But surely it must be clear that this is an enterprise fundamentally different from the scientific determination of an "if . . . then" sequence such as would result, for example, from the confirmation of any of the hypotheses stated in the previous section.

As I have said, both types of inquiry are proper and valuable. Myrdal's findings regarding the disparity between the avowed American Creed and the actual treatment of Negroes is illuminating from many points of view. Such a comparison tells the social worker something about the job he is facing. If he is a wise and practical social worker he may even allow under certain circumstances this appraisal of his task to cause him to modify his undertaking even though that involves compromise with the standard criterion with which he set out. But surely there is nothing to be gained by failing to recognize that such an appraisal is fundamentally a different undertaking from the grinding out of "if . . . then" statements. The two undertakings involve different objectives and methods and answer different questions. The measurement of the discrepancy between (a) an estimate, a hope, a desire, or an ideal, and (b) a determination of the actual state of affairs is an important condition for effective social programs. Engineers, social workers, and men in general are engaged in this kind of practical applied work at all times. Scientists, both physical and social, on the other hand, contribute to the realization of such programs when they grind out generalizations of the "if . . . then" kind. The division of labor seems entirely clear and, from an analytical point of view, essential.

Just as it is valuable for the individual who contemplates robbing a bank to know *the degree of probability* that the police will catch him, so it is surely valuable to society to know that the crime rate varies inversely as the distance from the center of the city; that cities attract population directly according to size, and inversely as the square of the distance; that in-groups

discriminate againt out-groups; etc. Clearly there *can be* scientific sociological knowledge which says nothing about what should be. Furthermore, and most important, what Pound considers the primary function of social science, namely, determining what ought to be and how to bring it about, is *impossible* without some prior grasp of the kind of knowledge we have called scientific. For it is the latter type of knowledge which tells us what must be done to bring about or alter or prevent certain events. Development of this latter type of knowledge is the proper business of the sciences. *In addition to* this kind of knowledge, society needs persons who will be concerned with and skilled in the technology of *preventing* the occurrence of certain events and behavior and *promoting* other events and behavior. This is the proper function of social workers and engineers broadly defined to include engineers, physicians, lawyers, educators, nurses, and, of course, social workers in the more limited meaning of that designation. We are highly dependent on the competence and ideals of practitioners of the latter type of activity in our relations with the physical as well as with the social world.

In short, social as well as physical *science* asks the crucial questions: What is the definition and specification of the problem before us? Under what conditions do certain phenomena appear, increase, or decrease? The answer to these questions in themselves in any science tells us absolutely nothing about what ought to be or what we ought to do. People in a given culture and in a given situation answer the latter question on the basis of their *value hierarchy*—their desires, aims, and beliefs regarding the costs and consequences of alternative choices. This value hierarchy—all of man's tastes, preferences, and desires—comes to him from his whole evolutionary history as well as from his own direct experience—biological and cultural. The organisms with "tastes" on the whole and in the long run compatible with or favorable to survival have survived biologically and culturally, and have transmitted and institutionalized their "tastes." The tastes[11] which are believed to have contributed significantly to such survival are regarded as good, their opposites as bad. Of course, both the record of this experience and its interpretation may be highly fallacious in the absence of the methods

[11] My use of the word "taste" in this connection does not imply that the preferences, values, and ideals of man are trivial, ephemeral, chaotic whims—as for example the preference for tea or coffee, a blue necktie instead of a brown, etc. On the contrary the preferences and values—mores—of men rest on extremely stable foundations, namely, the experience and interpretations of millennia of life on earth in relation to man's needs and interests. See H. Feigl, "Aims of Education for our Age of Science: Reflections of a Logical Empiricist", in *Modern Philosophies and Education*, Chicago: National Society for the Study of Education, 1955, Chapter 9.

of modern science, which have evolved and gained acceptance because of their demonstrable superiority in discovering and interpreting man's past experience.

Accordingly, the influence of scientific knowledge (as contrasted with folklore, superstition, etc.) *on these beliefs,* is often profound and in this sense scientific knowledge influences man's notions of what ought to be. That is, scientific knowledge may cause men to dismiss impossible projects, abandon others as unduly costly in terms of other values, and turn instead to new objectives more compatible with maximum satisfaction as measured by the existing scale of values. The fact that we are in desperate need of this impersonal, non-moral type of scientific knowledge as an instrument and a guide in the making of profitable, "good" choices should not cause us to confuse the methods by which such knowledge is obtained with the quite separate activity of deciding what that knowledge is to be used for.[12]

The latter is no simple problem, and it confronts the ordinary citizen (at least in a democracy), as well as social workers of all kinds, and administrators. As Dean Pound has said: "The hard practical problem of law making and of advocation of law is to find and apply a measure of values by which to determine what human planes or demands or desires to recognize, within what limits to give effect to them when recognized, and how to secure them within the determined limits consistently with the securing of other recognized and delimited interests."[13]

It is indeed a "hard practical problem." But it can be made less hard by systematic scientific study of the variables which Dean Pound correctly recognizes as involved: (a) "a measure of values"; (b) a recognition of a mutual exclusiveness of some of these values, and the variable costs and consequences of securing others; and (c) the arrangement of our values in a hierarchy for the group or society in question. All of this information can now be secured through the technique of scientific interviewing and polling.[14] With these data before us we are in a position to consider practical engineering details for securing maximally in the present state of knowledge any chosen alternative. The "jural postulates of civilization" which Dean Pound recommends and the "natural law" which others believe to be

[12] See H. Feigl, "The Difference between Knowledge and Valuation", *Journal of Social Issues,* Vol. 6 (1950), No. 4, pp. 39-44.

[13] *Op. cit.,* p. 37.

[14] See G. Lundberg, "Human Values: A Research Program," *Research Studies of the State College of Washington,* Vol. 18 (September, 1950), pp. 104-111; also S. C. Dodd, "How to Measure Values," *Ibid.,* pp. 164-168.

found in the "inarticulate conscience of mankind" are in my opinion nothing more than the surviving impressions of the experiences of the race which are believed to have been, through the ages, to their advantage and their disadvantage, respectively, in relation to their relatively permanent desires. The record of this experience and its valid interpretation require, however, that constant scrutiny and winnowing which science can best provide, and without which the true experience of the ages and its meaning tends to become hopelessly mixed up with myth, fable, and superstition.

VI

In my first published paper on sociometry[15] I made the following statement: "From this point of view, any social group may be regarded as a system of energy flowing through intersecting channels, eddying around every person and between persons in myriads of forms in different degrees, directions, and durations. These dynamics stand in the same relation to the more obvious social events that the atomic structure of matter stands to our understanding of the events of the 'physical' world. It is on the basis of these different forms, sizes, intensities, and durations that we undertake to distinguish between different types of human groupings, such as crowds, mobs, publics, neighborhoods, communities, states, etc. These nucleations of energy constitute the societal structure of social groups, and when objectively symbolized they are in every respect as observable, objective, and measurable data as are the physical, geographic, and ecological representations of the community."

Perhaps the principal contribution of sociometry has been to bring into the realm of objectivity observable and verifiable science a body of social phenomena of fundamental importance which had hitherto been regarded as intrinsically subjective and beyond the reach of such methods.

[15] "The Sociography of Some Community Relations," *American Sociological Review* (June, 1937).

A PLEA FOR THE STUDY OF AUTONOMY

MARIA ROGERS

Autonomy is one of the aspects of human groups which has received little systematic attention from social scientists. It seems appropriate to call attention to this neglected factor in this issue of SOCIOMETRY, which closes one era of that publication and looks forward to another. The increase in knowledge about interpersonal relationships since 1937, when the journal was founded by Dr. Moreno, has been tremendous, but even more significant is the increased appreciation of the definite role intimate group relationships play in all major social phenomena. Dr. Moreno's insistence that the macrocosm is to be understood through study of the microcosm has been well justified. Not only has this point of view influenced the scientific disciplines, but the researches stimulated by this point of view are being applied in many fields of practical work: industrial management, social work, group work, applied anthropology, education, and others.

In the practical fields, knowledge of the importance of intimate group relationships has stimulated a trend towards a more "permissive" atmosphere in schools, institutions, business concerns, factories, and the like. The most enlightened administrators of such enterprises even envisage the possibility of such an interrelation between the formal and informal structures within institutions as will release the creative potentialities of individual participants to an extent hitherto considered unattainable in an industrial civilization. As illustrative of this trend can be cited the report by Jerome Scott and Rolf Lynton to UNESCO, entitled *The Community Factor in Modern Technology*.[1] Another report pointing to similar conclusions was that of Helen Jennings to the American Council on Education.[2] Many other publications that mark this trend might be cited. The pioneer work in the field was, of course, Moreno's study at the Hudson Training School for Girls, from which much of the data for *Who Shall Survive?* was drawn, a study which showed how much administrative problems depended for solution upon knowledge of the informal structures of the community.

When the skills for a type of administration with this approach are sufficiently widespread, one can foresee the lifting of a great burden from

[1] UNESCO, 1952, to be procured from International Documents Service, Columbia University Press, New York 27.

[2] Jennings, Helen Hall, Sociometry in group relations; a work guide for teachers. Washington, D. C. American Council on Education, 1948, ix. 85 pp.

humanity, that of unreasonable and excessive authoritarianism. That would be a blessing indeed. But let us face frankly the fact that hopes of extension of the method rest almost entirely on discovering and developing administrators who can turn a deaf ear to the siren seductions of power: and history gives us little reason to believe that such individuals will ever be numerous enough for the need.

To counteract the persistent power-drive in human affairs, much more is needed than powerful individuals of good-will. The really effective counterforce is power dispersed throughout the groups of the community. Any number of political scientists, among them de Tocqueville, Bernard de Juvenal, Charles Merriam, George Sabine, to mention only a few, have agreed that the centralized organizations of society, such as the State, *derive* their power from the lesser units in the society. Smaller units may delegate power, or may surrender it for supposed benefits or because they are perplexed by unfamiliar complications, or they may be forcibly deprived of power by centralized organizations as these consolidate their positions.

The important fact is this: power is *inherent* in the small units of society, in even the smallest groups. (Whether these latter are groups of two or groups of three is still a matter of dispute between social scientists, but the point need not concern us here.) This is said with full awareness that the statement has been a bone of controversy for the past 2,000 years. Roman legal theory, which is influential to this day, insisted that groups derive their power from the State, which was conceived as a sovereign, single, irresistible authority, inalienable, indivisible and incapable of legal limitation. Thus the power of social groups was regarded as both derivative and conditional. As liberal theory developed in the late 18th and early 19th centuries, the leading thinkers, like Burke, Maitland, Figgis, Acton, Gierke and Owen, recognized that the crucial question that required an answer was whether or not the social group possesses inherent power. If not, all forms of authoritarianism (including totalitarianism) were justified and natural. If the answer was that the group does possess power *sui generis,* inherently, then this fact constituted the cornerstone of a free society and of the philosophy of liberty.

The case for group-power was ably argued by John Figgis in *Churches in the Modern State,* where he said:

"In the real world, the isolated individual does not exist; he begins always as a member of something and . . . his personality can develop only in society, within one or more social unions. . . . What we actually see in the world is not on one hand the State, and on the other a mass of unrelated in-

dividuals; but a vast complex of gathered unions, in which alone we find individuals. . . . The groups thus formed act by virtue of an inherent spontaneity of life which is not imposed, but is self-generated and original. They possess a living power of self-development". Human energy flows into the web of relationships which constitutes the group and endows it with living force. As to this being a description of social reality, there is no question.

Figgis' insights have been validated by sociometrists, who have shown that the very moment in which two or more individuals meet face-to-face, with the opportunity for association, is a vital moment, or as Dr. Moreno calls it, "the living moment". Any such meeting between individuals is a stimulus which provokes spontaneous response on the part of each person towards the others. The feelings of attraction, repulsion, or even indifference, thus evoked play a dominant part in the choices people make of companions or associates in any activities they engage in to fulfill their desires. Such co-operative activity is group activity and is the very warp and woof of social life.

A living power of self-development, spontaneity, and creativity are acknowledged to be characteristics of intimate groups. To some extent, these factors have received scientific attention, particularly in the past two decades. But little attention has been focused on a fourth characteristic: self-direction. To borrow from David Reisman terms he applies to individuals, most groups studied by social scientists are "other directed". They are institutional groups easy to approach. Particularly is this true of laboratory groups, where the selection of members of the "groups" and the tasks to be performed are dictated by the researchers. Observance of groups in society, however, quickly reveals that there are multitudes of "self directed" groups. Furthermore, these self-directed (or autonomous) groups play an exceedingly important role in social innovations, social changes, personality development, social conflict, social stagnation, etc.[3] The groups in society can be arranged on a continuum, ranging from completely "other-directed" to completely "self-directed". It is the former end of this continuum which has been most carefully studied.

Of self-directed groups, in one of the few instances in which a social scientist has commented upon them, Robert McIver wrote: ". . . The nature of the face-to-face group is revealed most adequately in the detached form where the members come together, not as representatives or delegates con-

[3] For case-material on these various phases of the activity of self-directed groups, see Vols. I—X of *Autonomous Groups Bulletin.*

stituted, defined and limited to allotted tasks by a predetermined interest, but spontaneously and apart from executive direction."[4]

There are thus any number of reasons why social scientists should in the coming decades undertake study specifically or self-directed groups: 1) as McIver notes, the nature of the social group is most clearly revealed in self-directed groups; 2) self-direction is closely linked with creativity; 3) self-directed groups make important contributions to societal phenomena, such as social change, social conflict and social innovation as well as social lag; 4) self-directed groups are the corner-stone, or key factor, in a free society.

The last point is especially important at the present time when every responsible thinker in Western society is endeavoring to build a rationale that is positive enough and strong enough to withstand, and counter, the proponents of totalitarianism. It is not too much to ask that social scientists be aware of this fact and add to our understanding of the factor of self-direction, or autonomy. The problem of method is, of course, that which impedes progress in this direction. But problems of method are not insuperable, given the will to obtain knowledge about any phenomenon. And many of the methods now used to study other-directed groups can, with patience and ingenuity, be adapted to the study of self-directed groups.

The free, autonomous individual was the ideal of the late eighteenth and nineteenth centuries; centuries in which group-life was so stable that it was taken for granted.[5] Now that the philosophical revolution of the eighteenth century has almost run its full course and we are beginning to recognize that the free, autonomous individual is politically and economically helpless; that the only counterpoise to centralized autocratic power is the dispersed power of social groups, it is incumbent upon social scientists who feel strongly about a free society to study the factor of autonomy. Let them bring together the many suggestions in the extant literature which indicate that autonomy is closely linked with creativity, with spontaneity, with self-realization of the individual. These should be amplified, correlated, and expanded by new studies.

[4] Quoted from *Society, Its Structure and Changes,* p. 172, by Lee E. Deets in *Autonomous Groups Bulletin,* Vol. X, No. 3.

[5] "The Two Democratic Traditions", George H. Sabine, in *The Philosophical Review,* Vol. LXI, No. 4, Oct. 1952.

ON SOME DEVIATIONS IN THE INTERPRETATION OF THE CONCEPT OF SOCIAL STRUCTURE*

GEORGES GURVITCH

It should be enlightening to examine four sets of wrong reasons for the excessive infatuation with the concept of social structure. These reasons, according to our conviction, have led some sociological theories into an impasse as well as toward abuses prejudicious to the clarification of the concept itself, which is as such very useful and sound.

A. First of all, we must deal with the artificial relationship which certain scientists would like to establish between the application of methods of measurement of social phenomena, and specifically mathematical techniques, and the problem of social structure. This orientation stems from a quadruple source: first, from ethnology, secondly, from economics, thirdly, from linguistics, and finally, from morphology-ecology.

1. Fortes on one hand, and Murdock on the other, have been the first ones, in ethnology, to voice the idea of employing "social structure" as the basis for quantification. Thus Fortes has asserted—in a somewhat circular fashion:[1]

> "The qualitative aspect of social facts is that which we usually call culture. The concept of structure, I think, is more appropriately applied in conjunction with those aspects of social phenomena (social events and organizations) which are actually susceptible to descriptive and quantitative analysis."

And he adds that this quantification—the way to which opens up thanks to the concept of social structure—is preferably of statistical nature.[2] Murdock goes much farther. The concept of "social structure" in his terms, is identified with sampling and is substituted by a computational procedure which depicts the limited number of possible combinations[3] repeated in the same way as do "forms and structures of language".[4] The "stating of the repetition of cases in mass" is conducive not only to the conclusion

* See for the *positive development of the theory of social structure* our paper about it in *Cahiers Internationaux de Sociologie,* vol. XIX, pp. 3-44, 1955. See also our book *Déterminismes Sociaux et Liberté Humaine,* Paris, 1955, pp. 181-282.

[1] Meyer Fortes, *The Social Structure,* 1949, p. 54.

[2] *Ibid.,* p. 59.

[3] Murdock, George P., *Social Structure,* 1949, pp. 115-16 ff, 220 ff.

[4] *Ibid.,* pp. 145 ff, 199 ff.

that the number of social structures is very limited but also that "they make regularities possible by conforming to scientific laws which are as valid as the laws in the natural sciences", and that "a very high degree of precision and predictability would result" from employing the concept of social structures.[5] In this respect, anthropology, psychology, and sociology "do not differ from physics, chemistry, and biology".[6] A French ethnologist, Claude Levi-Strauss who would like to synthesize all interpretations which link social structures and mathematics cites[7] also the more specialized studies of D. Forde (1951) and V. Elvin (1947) as contributions to this line of thinking.

2. It seems to us that the second source of this position regarding the concept of social structure has been far more important: the identification of *economic structures* taken as a particular set of models (such as those of production of consumer's goods, purchase of goods, total revenue, probable profits, purchasing power and so on) with mathematical equations.[8] The most characteristic, and authoritative, work along these lines has been the book of Leontieff, *The Structure of American Economy, New York, 1953.*

> "The whole of economy is divided into a certain number of sectors: agriculture, diverse industries, the public and the private sectors. A table indicates the net production of all the sectors as well as relative contributions of each sector to the others. Starting from the assumption, it is possible to calculate the coefficients of production which one argues constant. The coefficients of production give the volume of various categories—manpower, capital of a specific type—which are necessary for production . . . in a given sector. Information of this type is of great importance in political economy. They may be used, for example, in studying the general effects of the wage policy".[9]

We are far from being disinterested in studies of this type . . . *within* particular types of social structures. Yet, we believe that the concept of "structure", though used only in the economic sense, has been employed here rather arbitrarily: it is taken in the literal mathematical sense alone to mean the "relations of any part to any whole". Finally, it is aiming rather

[5] *Ibid.*, p. 259.

[6] *Ibid.*, pp. 283 and 322.

[7] Levi-Strauss, Claude, in *Anthropology Today*, ed. A. L. Kroeber, 1953, pp. 524-53.

[8] *Cf.* expositions of A. Tustin and R. C. Bootan, Jr. in "La role des mathématiques en matiere de prevision et de stabilisation economiques", and G. Tinter, "L'emploi des methodes mathématiques en econométrie" in *Mathématiques et Les Sciences Sociales*, Bulletin International des Sciences Sociales, 1954, Vol. 2, 4, pp. 692-718.

[9] *Ibid.*, p. 709.

at mathematical precision of *conjectures* in economics, conjectures which are certainly different from *structure*, both being manifestations of all-inclusive real wholes, but *different conjectures* can change within the same *structure*.

The studies of Leontieff are of little value in other than capitalistic structures of a specific type: the organized American capitalism. Furthermore, the application of the term "structure" to specialized social activities, such as economic, cognitive, linguistic, religious, moral, legal, political, matrimonial, does not seem very adequate since it might lead to isolating these activities—on one hand, from the total social phenomena—, on the other hand from collective macrosociological units (particular groups and global societies), of which these activities are but abstractions, whereas the partial or global structures are authentic elements of them.

To identify an equation with a social structure like some of the economists have been doing does not only mean to ignore the real collective units and the total social phenomena. It also means to avoid simply the task of showing how, why, and to what degree the mathematical calculus is applicable to economic life. We move here in a vicious circle, indeed. But beyond that, one makes the unwarranted assumption that models which may play a more or less important role in economic life are ipso facto playing always the same role in different types of social structure and in various social conjectures.

3. Let us now briefly discuss "structural linguistics" as still another source of inspiration for establishing the abusive liaison between social structure and the problem of measurement in sociology. Unless one, arbitrarily, attempts to reduce social facts to the language as their basis by pretending that "communication" (as a source of social life) is primarily "verbal" (and this implies a poorly concealed nominalism and rationalism, as well as it reveals ignorance of essential problems of the foundations of validity of language, and more generally of communication between people),[10] one cannot see that "linguistic structure" could help explain the concept of "social structure", nor can one see why in this field mathematical equation should be promoted.

In the area of *phonology*—which the specialists of "structural linguistics" have distinguished from the vastly greater area of *language* (which

[10] *Cf.* Claude Levi-Strauss, "Les Mathématiques et l'Homme" in the *Bulletin, op. cit.* pp. 643-45, and by the same author, "Language and the Analysis of Social Laws" in the *American Anthropologist,* 1951, 53; *cf.* also G. Shannon, *"The Mathematical Theory of Communication",* 1949.

itself is but one of the many aspects of communication presupposing the existence of total social phenomena [the We, groups, global societies], and also often of social structures as one of the parts of the macrosociological units)—research in the structure of "phonems" of a language by statistical or other methods may probably be very useful. But this research has nothing to do with the study of social structures! On the contrary, if we do not confuse "speaking" (langue) and "language", "language" and "communication", "communication" and "total social phenomena" (the We, groups, global societies) of which, in their macrosociological manifestations, one of the aspects is the "social structure", the reverse question could legitimately be phrased: is research in "coherence of phonems" by structural linguistics sufficient in itself, and can it afford to ignore completely the relations between "speaking" and "language" assuming that without social life there would be no language (of which phonetics is but a part)? Thus sociology instead of looking for support in the phonetic structure of the language could rather render support to the studies of phonetics.[11]

4. The last source from which the attempt to tie the concept of social structure with mathematical measurement stems originates from the regrettable confusion resulting from the conceptual position of certain representatives of human ecology—a discipline emphasized particularly in the United States. In this approach, that which is designated as "structure" and the externally perceptible surface of social reality are confused. The latter can be placed into the confines of the conceptualized extensions (étendues) transformed to ecological-morphological space more accessible by the metric, graphic, or briefly quantitative procedures than any other social extension.[12] Indications of this type—any way rapidly surpassed—can be found as far back as in the *Les Règles de la Methode Sociologique* of Durkheim. To assign more weight to preestablished characters and to constraint of groups, they are looked upon not only as always organized but as occurring under the impact of "material density" in correspondence with their "spatial structure" and their demographic aspects (soil and population). Henceforth comes the *double meaning* of the term "social morphology" in Durkheim: that of the study of types of groupings, and that of the study of their ecologico-demographic-spatial base with the latter assumed as conditioning the former, or even identical with it.

[11] *Cf.* on this subject an interesting study by Haudricourt and Granai, "Linguistique et Sociologie", *Cahiers Internationaux de Sociologie*, 19, 1955, in which the distinction between "langue" and "langage" is to be found.

[12] *Cf.* our analysis in *Déterminismes Sociaux et Liberté Humaine, op. cit.*, pp. 104-13.

In France, due to the efforts of Mauss and foremost of Halbwachs, the term "morphology" has retained but its second meaning, and the study of groups, their types and their structure became a separate branch. In the United States, "human ecology" encouraged by anthropology à la F. H. Cushing on one hand, and on the other hand, by the Chicago School, has been confusing "spatial configurations", distribution of the population by zones, the population "habitat", "distances from place to work" with the "social structure" and with the "social distance".

On first sight, nothing seems easier than to measure by numbers, equations, statistics, and graphs the density of a population, its distribution over area, its movement from rural to urban scenes, and alternatively, the impact upon the population of different regions or different urban residences, of the social settings and habitats of groups and individuals, the territories, communities, parishes, provinces, departments, states, and so on. Similarly: the monuments, buildings, churches, barracks, prisons, ateliers, stores, the different routes of transportation, the different vehicles, utensils, instruments, machines, industrial and agricultural products, foodstuffs, and so on. But nothing could be more mistaken than to study all this and ignore all the other layers of depth in social reality the influence of which permeates and transforms this material aspect and renders it effectively *social*. This externally perceptible surface becomes entirely modified and bears the decisive marks of collective human actors, of "society in acting". "Social distance" may take a variety of meanings and cannot be always reduced into the metric space, nor even to different kinds of social extensions.

Furthermore, the role of the ecologico-morphological depth level varies depending on the type of group, of inclusive society and of their structure, and plays different roles in each micro- and macro-sociological framework, in each total social phenomenon, whether partial or global, and thus also in the special sector relevant to macrosociology, the sector of "social structure". To identify the morphologico-ecological level with social structure is to put the horse before the cart; it means to become victim of spatial associations and illusions favored by common sense when the concept of structure is mentioned (for example, construction of a house); it means to forget that the ecologico-morphological level is possible only *within* a social framework; it means to neglect that the mathematical calculus could give here some results only when the underlying social structure was *identified beforehand*.

B. We are, by now, equipped with most of the points which we will be needing in taking a position on the subject of a recent study by Claude

Levi-Strauss on the concept of "social structure".[13] This study, in spite of all erudition and the appreciable efforts to arrive at a new and clearly cut definition, seems to us to represent a veritable breviary of most of the actual, and even possible, errors regarding the concept under discussion—including also its pretended liaison with mathematical measurement. All four sources of deviation and abuse which we have here attempted to denounce have been utilized by the author in his interpretation of the concept of social structure. Not only does the author nourish these errors, but he, so to say, sublimates them and justifies them by integrating and synthesizing them into his own theory of structure. In it, the social structure is reduced to models whose ordering calls for the intervention of mathematics. These models are borrowed: from ethnology—like those of kinship relations; from morphology-ecology; from phonology which is equated with the whole of language; from political economy in the form of the Morgenstern-Neumann games models; from "relations of subordination"; from political and religious ideologies; from mythology. All of these models are considered by Levi-Strauss as "structures", "communications", "exchanges"—"transitive", "cyclical" or both—are called to serve as the basis of "structures".

It seems that, in this author, no reality *sui generis* is left for "total social phenomena", of macrosociological collectivities (societies, classes, groups), nor of unifying functions of social structure, nor of specification of structures by qualitative types. All what remains seems to be but general equations of models predicting past, present, and future "structures". Doesn't the "social structure" then simply and purely mean "the mathematical structure"? Are sociology and anthropology to be dissolved in the *"mathesis universalis"* foreseen already by Leibnitz? This impression gets confirmed as we read statements such as the following: "We may be certain, today, that young specialists in the social sciences must possess a solid mathematical background unless they wish to disappear from the scientific scene".[14]

A further examination of the analysis of the concept of social structure in Levi-Strauss leads us to several surprises. First of all, he underlines that mathematics need not result in quantification; and that it is possible to measure without touching upon the qualitative character of phenomena. Levi-Strauss does not add that, in this case, mathematics fails to *explain*, and serves but as a pure and simple way of re-expressing that which is al-

[13] *Cf.* "Social Structure" *op. cit.* and the French translation in the *Bulletin de Psychologie*, 6, May 1953, pp. 382 ff.

[14] *Bulletin International, op. cit.*, pp. 652.

ready known without mathematics, being applied even to such unrepeatable events that can be coded like in sociometry.[15] The indispensable union of "qualitative mathematics" and "social structure" in this way disappears for "qualitative mathematics" could be equally well applied in connection with *non-structural* elements of social reality such as, for instance, micro-sociological phenomena (We's and interpersonal relations) to which could be attributed "coefficients".

Our author opposes "mechanistic" and "statistical" models; he aims at models which are a transition between the two. In this fashion, he believes to make it easier to accept the paradoxical equation of mathematically ordered models with social structures. We suppose this to be indicative of a feeling of uncertainty and of apprehension to have reached an impasse. This becomes clearer when we come to realize that the models are generally not standardized but are merely symbols or signs formulated *ad hoc* to fit particular circumstances or conjectures quite often unrepeatable. They are neither mechanistic nor statistical; but they are not a mixture of the two either.[16]

Finally, Levi-Strauss says that only the "subordinative structures are dynamic", which presupposes that "communication structures" are static and that the models of subordination and those of communication cannot be easily integrated into the same "ordering" unless this were a mere "mathematical ordering"! We are here assisting at the breaking up of a scheme which the author has imposed upon himself, and which does not resist by the contact with social reality.

Henceforth the ultimate appeal of Levi-Strauss for an *"order of orders"* in which the numerous and different models are ordered in terms of a "total model", an expression borrowed by Fortes who carried it into British ethnology. Our author fails to see that, in this manner, that he is dealing either with the "total social phenomena" (preferably in their global manifestations) which are infinitely richer than all structures and the more than all combination of models; or else, that he is dealing with the traditional concept of "social order" inaugurated in de Bonald and Comte and further advanced by a long list of sociologists—at our time, mostly American ones.

In both cases it is advisable to recognize the complete failure of Levi-Strauss to arrive at a new definition of the concept of social structure where-

[15] *Cf. Déterminismes Sociaux* by the author, *op. cit.* pp. 652 and *Vocation, op. cit.* pp. 236 and f.

[16] *Cf. Déterminismes, op. cit.* p. 20 ff, 125-26, 127 ff, 133 ff, 137-40.

by one could demonstrate the indispensable link between the concept and the mathematical ordering of models. Nor does his study bear upon the very issues which have revived the interest in the concept of social structure; the elimination of all value-judgments implied in the idea of order, as well as the rejection of the mistaken dichotomizing of structure and dynamism, movement, act, acting and so on.

C. In leading us in a somewhat veiled manner and after considerable efforts to the traditional conception of the "social order" (confused by the way with "mathematical order") to which the "social structure" becoming then useless is reduced, Levi-Strauss prepares us for one more such reversal which is in no way less surprising. We are referring here to the return—after numerous hesitations—of recent theoretical American sociology, enjoying some renown without sufficient reason, such as Parsons, Shils, Merton, Levy Jr., to the concept of ***institutions*** and ***institutionalization***—concepts which the term "structure", according to our conviction, has the mission to eliminate! We believe that the mentioned authors reach a veritable vicious circle: in effect, social structure is composed for them of a set of institutions, and the institutions . . . are manifestations of a structure. The two terms, as we shall show, serve here no other purpose but to be so intertwined as to conceal the inability of those sociologists to define either, as well as their incapacity to understand social wholes in any other way than as simple *collections* of "social relations", roles, positions, strata, values—or in the best case, as rigid organizations.

The shortest and clearest definition to be found in Parsons of the concept of social structure is: "The differentiation of a social system".[17] Under the latter term is subsumed, according to the resume of F. Bourricaud, a competent translator and French interpretor of Parsons, "A system of interactions developing in a situation among actors oriented by a culture".[18] In the volume entitled *Toward a General Theory of Action,* edited by Parsons and Shils, in the section written specifically by them, we read: "a social system presupposes a 'value-orientation', a 'concerted action which depends upon an orientation toward shared goals or values and upon a consensus of normative and cognitive expectations' ".[19] In another text, Parsons insists that the "social system" is a "system of differentiated roles"; in view of the movable character of the system, this trait implies "a distribu-

[17] Parsons, *The Social System,* 1953, *cf.* Fr. Transl. p. 262.
[18] *Ibid.,* p. 53.
[19] *Ibid.,* p. 55.

tion of personnel, that is of actors in roles, the distribution of facilities, as well as rewards".[20]

Under these conditions it would appear justified to ask whether, according to Parsons, there exists a difference between "social structure" and "social system" (the latter term being also identical with "social action" understood as *conduct* [qualified behavior] rather than as an *act*) and finally also between both and the "social reality". This impression is but reinforced by the observation that in discussing the "social system" Parsons speaks also of the "role structure".[21] In any case, and that is more important, we are told that an attempt is made to develop a "general theory of action" (conduct) which could serve as common basis for psychology, sociology, and ethnology,[22] and let us add, political economy.

Parsons, of course, has attempted to distinguish between "structure" and "system"; in fact he does not cease to use the expression "structure of social systems",[23] and he writes notably: "The categories in terms of which we describe a system as a structure are the same ones as those in terms of which we describe the norms that regulate action".[24] "Structural analysis includes", according to the author, "two levels": It "defines, first of all, the paramount value system and it analyzes the social differentiation by taking the system of values as the basis for the analysis".[25] If one were to adhere to these texts, the "social structure" would be distinguished from the "social system" by a certain sublimation of a dominant hierarchy of values and of social norms imbedded therein, *a sublimation employed to justify social stratifications characteristic of a given social system.* The term structure would then stand for but the *ideal types* of systems constructed accordingly to the criterion of the dominant scale of values in a given society; briefly, we find here the familiar notions of the Weberian methodology for establishing social types which had influenced Parsons so profoundly.

But our author is himself worried about the grave danger of confusing a method of study with the real component of a "social system", a component which is, according to the affirmations of Parsons, the "social struc-

[20] *Ibid.*, pp. 114-15.

[21] *Ibid.*, p. 114.

[22] F. Bourricaud, Introduction a la trauction francaise des extraits de Parsons, *Elements pour une Sociologie d'Action*, 1955, p. 59 ff.

[23] *The Social System, op. cit.* pp. 21, 36, 68 ff, 137 ff, 434 ff.

[24] Bourricaud (French transl.) *op. cit.* p. 265.

[25] *Ibid.*, p. 275.

ture" itself. It is for these reasons that, reluctant, Parsons seeks to establish a relationship between the concept of *social structure* and *institution*. Did he not, in his very first volume study Durkheim at the same time when he studied Weber? Have the American sociologists not been misusing the term "institution" in a wide variety of meanings—a term which, in fact, has never been clear or precise (provided that it could be!)? What a temptation! Could one not revive the well compromised concept of institution thanks to the concept of "social structure", and, in reverse, could one not define the concept of structure—itself quite difficult and at the same time provocative, as well as justified,—thanks to another term which appears more manipulable: that of "institution" or of set of institutions?

Let us begin by a few quotations which prove that Parsons and his followers cannot get rid of the concept of institutions in trying to define the concept of social structure. A structure, this author tells us, is an "institutional integration".[26] A structure consists of a combination and differentiation of institutions.[27] "Sociological theory is an aspect of the theory of social systems which deals with phenomena of institutionalization of models whose characteristic is value-orientations, as well as it deals with the conditions of this institutionalization. . . ." In this sense the theory of institutionalization is identical with the theory of social structures. We read in the collective volume, edited by Parsons, this general declaration: "The structure of a social system is . . . stabilized and reinforced by the institutionalization of models and values".[28]

One of the collaborators (E. C. Tolman) goes as far as to equate entirely *institution* and *structure*. He writes specifically: "Any social system is made up of mutually overlapping social structures *or* institutions. Each structure *or* institution . . . is constituted by a number of complementary social positions, or . . . social statuses".[29] Parsons himself, without formulating such a crude identification, does not define clearly the emphasis which in the "social system" is to be designated as "institution" and that which is to be designated as "structure"; but he tries to link both terms as intimately as possible.

In attempting to understand the meaning of the concept of "social structure" in this school we should ask ourselves now what is it that is meant by their protagonists by "institution" and "institutionalization".

[26] *Social System, op. cit.* p. 36.
[27] *Ibid.*, p. 137 ff.
[28] *Toward a General Theory of Action, op. cit.* p. 25.
[29] *Ibid.*, p. 349.

"Under institutionalization", we read in the cited volume, "we understand the integration of expectations of the actors in a system corresponding to interactions of roles according to a shared normative pattern of values".[30] And further:

> "The social roles are institutionalized when they are fully congruous with the prevailing culture patterns and are organized around expectations of conformity with morally sanctioned patterns of value-orientation shared by the members of the collectivity in which the role functions".[31]

"It is through the internalization of common patterns of value-orientation that a system of social interaction can be stabilized" in institutions.[32] Also, the "stability of social structures" is derived from their institutionalization".[33] In another section of the text we read: "Situations are grouped, according to regularities of action in them, into institutions . . . (. . .). These similar actions are said to be institutionalized if the actors expect them to occur and there are cultural sanctions opposing nonconformity with expectations". The points of adjustment of institutions are the "statuses and roles" of which the institutions are "combinations".[34]

In his book *The Social System,* Parsons has proposed the following classification of institutions: 1. *"Relational institutions"* which define role expectations as such, independently of the interest content; 2. *"Regulative institutions"* which define the "legitimacy of pursuing private aims in consideration of goals and means", these institutions can be (a) instrumental, (b) expressive, and (c) moral; 3. *"Cultural institutions"* which can be of three types: (a) cognitive beliefs, (b) systems of expressive symbols, and (c) private moral obligations.[35]

If we now compare this classification of "institutions" with that of "social structures" we will notice, not without some surprise, that they correspond to each other on all points with the exception of one additional category regarding the "social structures": "the manner of integrating the relational institutions and the regulative institutions into a social system, and of providing sanctions pertaining to this integration", which would give, according to Parsons, "integrative structures".[36]

[30] *Ibid.*, p. 20 note 26.
[31] *Ibid.*, p. 23.
[32] *Ibid.*, p. 150.
[33] *Ibid.*, p. 174.
[34] *Ibid.*, p. 40.
[35] *The Social System,* pp. 58 ff.
[36] *Ibid.*, pp. 137 ff.

What to think of this interpretation the clarity and profoundness of which are, at least, more than questionable? To judge we ought to start with the popular and at the same time discredited concept of "institutions". From the time when Durkheim, and primarily his disciples Mauss and Fauconnet, believed necessary to promote it by defining institutions as a "set of actions and ideas which individuals are faced with and which are imposed upon them",[37] or as in Durkheim, "all beliefs and all modes of conduct instituted by a collectivity",[38] this concept has been running into considerable and numerous difficulties with regard to its use and precision. In fact, it has been both too *broad* and too *narrow*. This concept is too broad for it appears self-evident that beliefs, ideas, values and collective conducts, even in as much as they are preestablished, are not all of the same character (for example, organized behavior; rituals and procedures; conduct more or less corresponding to patterns, signs, signalizations; practices; mores; routines; ways of life, fashions, fads, infatuations, etc.). The concept of institution is too narrow because, in this way, the non-preestablished is excluded: social life and even its particular aspect which constitute the "social structures" are too well groomed, calm and conformist (for example pulsations of collective excitement, non-conformist, transformist, revolutionary, creative conduct, as well as "the free flow of the collective mentality", and even the "forms of sociability" are more or less unconsciously eliminated).

At the same time, the distinction between "institution-groups" and "institution-things" (for example, property, obligation, heritage) is ignored—a distinction which has been made by the lawyer-sociologist Maurice Hauriou.[39] Unfortunately, Hauriou—as jurist, envisaged the problem only within the realm of jural life. Yet, were one to accept the terminology, all cultural productions—such as religion, magic, knowledge, art, education, ethics, language, and finally whole civilizations, could be considered "institution-things". A great difficulty needs to be faced: where lies the limit of the term *institution* and *institutional?* Is, for example, a philosophical doctrine an institution? And should one say that religion is an institution? Does the term carry the same meaning when one says the Church is an institution, opposing it to religious beliefs and to religious practices?

[37] Grande Encyclopedie Francaise, 1901, article "Sociologie".

[38] Preface to the 2nd edition of *Règles de la Méthode Sociologique,* XXIII, quoted from the 8th edition of 1927.

[39] *Cahiers de la Nouvelle Journée,* 1925, "La Theorie de l'Institution et de la Fondation".

When Hauriou suggests to unify the concept of institution (reconciling "institution-groups" and "institution-things") which he defines as "the idea of work or of a task to be accomplished which is realized and endures . . . in a social milieu",[40] he does not solve the difficulty. Not only because he connects the concept of institution with Platonism, and the belief in the incarnation of eternal ideas in the social reality,[41] but also because this "ideo-realism" cannot justify the inclusion, under the same class of such different elements of the total social phenomena as: common task, non-personified authority, collective spontaneity, particular groupings, and so on; all these elements really do exist, can be studied, and are suspectible to a classification and to an explication which does not need at all to refer to the concept of institution.

In vain, various efforts have been recently made in the United States to define the institutions as "permanent groups integrated in a society" (Herzler, Chapin, W. Hamilton), or as "the more important groups recognized in a society" (Hiller, Panunzio and others), or as "recognized and systematized mores" (Sumner and Keller), or as "manifestations of indispensable cultural activities" (Malinowski), or as "rites and procedures" (MacIver), or as "rules, statuses and roles combined" (Linton), or as groups performing impersonal functions on one hand, and imposed groupings on the other hand (Znaniecki). In all these cases, the term "institution" does not add anything and does not clarify anything as far as the relevant phenomena are concerned; it is thus, from the scientific viewpoint, an entirely useless concept.

Only the second definition, that of institutions as "the more important groups" in a society, merits a little more detailed analysis; it refers to official or at least officious groups; estimations and value-judgment either of the sociologist or the dominant social groups are thus reintroduced here. In the best case, this perspective lends itself to describing the *hierarchy of functional groupings appropriate to a given type of global social structure;* nevertheless, in all structures, this hierarchy is counterbalanced by a series of other hierarchies. In global structures wherein social classes can be found there exists an evident concurrence of the class-hierarchy with the hierarchy of functional groups; yet, no one would wish to call social classes "institutions". Here again, the term makes itself useless and is conductive merely to confusions. On one hand, the study of the hierarchy of functional groups

[40] *Ibid.*

[41] *Cf.* about the institutional theories of M. Hauriou our own *Idée du Droit Social,* 1932, 664-97, and our *Sociology of Law,* New York, 1942, pp. 139-47.

constitutes a much clearer undertaking than the study of the institutional elements; on the other hand, it is not this single hierarchy but the equilibrium of *multiple hierarchies* which can lead us to the concept of structure!

In his definition of institutions, Parsons seems to have aimed at synthesizing the majority of the erroneous conceptions of this confused term of institution. He borrows from Durkheim (sanctions, preestablished character, inclusion in the same concept of groups as well as of all beliefs and ideas imposed upon individuals), from Malinowski (cultural institutions), from Sumner and Keller (recognized and systematized mores), from MacIver (rites and procedures), and first of all, from Linton (rules, statuses, and roles).

As a result of this syncretic labor of pasting, Parsons has succeeded in keeping under the same heading extremely disparate elements, a collection of trifles, if I may use such a term. For the "expressive symbols" and the "non-symbolic models", the sanctions, roles, statuses, interpersonal relations, real groups—all that does not take together in Parsons (one would not dare to say to form a coherent framework, and of course not a unity or a whole), except by reference to the "hierarchy of shared values", to "value orientations" assumed to be identical in the same global society! According to Parsons, the "social actions" (yet, the term means no more than the social conduct of Weber) inspired by the identical "value-orientation" provide the unifying force of these arrays of elements and integrate them in a "stable structure". This construct, both artificial and false, does represent but a dishevelled amassing of "common places" coupled with an abundant and opaque wording, and does not approach to be a theory, except by its appeal to an extreme and desperate spiritualism. Only the belief in the preexistence of values and their unique presupposed hierarchy which is affirmed as uncontested within the same society makes it possible for Parsons to make ends meet in spite of the weakness of his thinking. The key is to be found in Max Weber (and his philosophical inspirations) from whom the author has also inherited his social nominalism the impact and consequences of which he attempts to conceal.

If one is to agree that Parsons conceives of "action" in the rather conventional sense of qualified "behavior"—as conduct guided by goals and norms, and only indirectly by values (anyway current and preestablished)—one cannot but conclude that the author does not even touch upon problems of "the society in act or acting", "effort", "choice", invention, decision, collective creativity; he eludes all excitement, all degrees of collective freedom and neglects even all pulsations in social reality. Thus a strong dosis

of psychologism on one hand (with emphasis on "expectations", "orientations" towards values, "interpreted roles") and social conformism on the other hand, are added to this dogmatic and rationalistic spiritualism, as well to this nominalism and good looking behaviorism.[42]

Parsons ignores completely all that surpasses expectations, sanctions, regularities in social life, for example the struggle between different classes, different groups, different stratas, different but equivalent hierarchies of values, different social temporalities, different determinisms, without speaking of different levels of depth, or different forms of sociability, and finally, of different kinds of roles—privileged, imposed, regular, modified, created, fluctuating, unexpected, aimed at, imagined, and so on.

The views of Parsons having once again involuntarily shown the perfect uselessness of the concept of institution add only to the general conceptual confusion in sociology. They do not succeed in differentiating between institutions and social structures—ignoring that the main task of the present day theory is to replace the former by the latter concept; nor do they distinguish really social structure and "social system" terms which he tries to substitute for "total social phenomena", concept that Parsons is avoiding carefully.

The concept of "social structure" differs by our author from that of "institution" only by its *"integrative character"*; but do not both institutions and social systems have also an integrative character? Perhaps, in discussing the integrative character, Parsons is referring to the global—all inclusive society; but there is not a global society which could be reduced entirely to its structure and all structures are not at all global and there exist also many partial structures, of groups and classes for instance. Parsons calls on the idea of differentiation of "social roles" and simultaneously on "value orientations" when he defines the "social system"—the social structure—the institution, as well as he does not hesitate to speak about "relational institutions",[43] thus all distinction between institution and social system disappears.

[42] Bourricaud, *op. cit.* pp. 94 ff. defends Parsons accused of behaviorism. But he can do this successfully only by ignoring different actual trends in behaviorism, which are recognizing without difficulty that amongst various kinds of behavior, there is a place for a *motivated behavior* or *conduct*. What escapes Bourricaud also is the difference between *action* (in the sense conduct which Parsons gives to the term) and *act*.

[43] Bourricaud, *op. cit.* p. 64 is mistaken in his belief that "le Durkheimien, le plus sourcilleux aurait du mal a reprendre" Parsons "sur la réalité et l'objectivité des institutions"; in fact, under this bad term was hidden by Durkheim the profound vision of the irreducibility of social wholes to their parts and participants, a vision which is completely lacking in the nominalism of Parsons.

We are now finally left with three terms: social system, institution, and social structure; all three are merely destined by Parsons to the rescue of each other so that their appearance of clarity and usefulness may be preserved. The mission of these concepts becoming tautological in the analyzed theory is in any case the same: to camouflage the impossibility and incapacity of Parsons and his disciples due to their combination of spiritualism and nominalism, to grasp social reality as a whole, a totality, and to explain the basis of the unification of real collective units (groups and societies).

Thus the concept of social structure has nothing to gain in the vicious circles and verbal formulas as broad as pretentious of Parsons and his "school". Its real scientific meaning is only concealed and compromised by such an approach.

D. To conclude our analysis of the misuses of the concept of social structure we have yet a few words to say about its employment in the "functional analysis in sociology", transformed into "structural-functional analysis" by some of the disciples of Parsons, such as Merton, Marion Levy Jr., and others. The functionalist school, of which the undisputable leader is Malinowski, was stranded for reasons which Merton has lucidly mentioned: the confusion between interdependence of all parts of a whole—and the movement of the last; confusion between motives and consequences of conduct; confusion between services performed in the interests of the whole and those performed for the sake of particular sections, parts or groups; confusion between that which is effectively indispensable and that which is only current (and may be "a-functional"); confusion between conformist activities and activities resulting from tensions and struggles ("dis-functional"); confusion between that which is irreplaceable and that which admits functional equivalents or substitutes. Yet, these errors have not prevented Merton and his colleagues from refusing to abandon functional analysis.[44] Merton believes that, in order to arrive to a good solution, thanks to "structural-functional analysis", it suffices to state that "the structure affects the function and the function affects the structure",[45] and that "functional analysis" accentuates the dynamic element of the structure and is helpful in "social engineering"[46] and "in clarifying practices which appear irrational".[47]

[44] Robert K. Merton, *Elements de Méthode Sociologique,* Fr. transl. 1953, Chapter III, 67-168.

[45] *Ibid.,* pp. 167-68.

[46] *Ibid.,* pp. 122 ff, 133 ff, 136 ff, 138 ff.

[47] *Ibid.*

It seems to us superfluous to insist on the fact that, in spite of an analysis which is a little bit more critical than that of Parsons, the views of Merton take their roots in an evident syncretism, and that they fail to clarify the concept of structure as well as that of function, and finally, that of their relationship.

We believe that, in sociology, the only exact meaning of the term function is that of "task to be accomplished" (this is why we have distinguished, in our writings, between the "uni-functional", the "multi-functional", and the "super-functional"). We find "tasks to be accomplished" and thus, functions, in the social reality without any structure: in astructural and non-structural phenomena (for example, in the "active forms of sociability", and in "unstructured groupings"), as well as within structures would they be partial or global (tasks to be accomplished by individuals, by the We's, by particular groupings, by social classes, by organizations, by public services, and so on). This "tasks to be accomplished" or functions can be positive or negative and can have a variety of directions.

The concept of function, taken in abstraction, does not add anything to the concept of the active We's, the groups, the global society, the "partial or global structure", for we always have here to deal with "totalities on march", in movement which, for that reason, have "tasks to accomplish", that is, they always are *functioning*.

As for the structures, it suffices to state that they are always to be found in a perpetual movement of *structuring, restructuring* and *destructuring* to formulate all the problems which the more enlightened partisans of the "functional-structural analysis" could become aware of, at least implicitly.

The problems of functions as a special field is effectively at stake only —apart from the distinction between uni-functional, multi-functional and supra-functional groupings—when one wants to study the hierarchy of "functional groups" which is one of the pillars of all global social structures; this hierarchy is always modified either by the competition of the hierarchy of classes (supra-functional groups) or by the fact that groups often assume tasks which were not assigned to them or abandon tasks which were imposed upon them.

Thus, in conclusion, the social structure—in order not to multiply without use the terms ("entia non sunt multiplicanda")—never requires a special "functional analysis", but often implies functions as do all manifestations of social reality. We believe to have dealt critically with a great part of the deviations occurring in the uses and interpretations of the concept of social structure. We did it not in order to destroy the concept but

to *promote* it to a greater clarification and to a larger employ in sociological analysis of *macrosociological units,* partial or global, where the terms of structure, structuring, restructuring, destructuring, are often badly needed.

SYSTEMATIC SOCIOLOGY AND LEOPOLD VON WIESE

HOWARD BECKER

Some time ago, Dr. Moreno was so kind as to ask me to prepare for SOCIOMETRY a note or brief article dealing with the relation borne by the American book, *Systematic Sociology,* to its German basis in the writings of Leopold von Wiese.

This is a welcome task, for it gives me the opportunity to clear up, as I hope, a number of the manifest misunderstandings about the nature of *Systematic Sociology.*

One misunderstanding, frequently evident in quotations, citations, and bibliographies, is that it is merely a translation of Wiese's "Theory of Social Relations" (*Beziehungslehre*) and "Theory of Social Structures" (*Gebildelehre*). Reading of parts of the Preface of the *Systematic Sociology,* written in 1931 and printed in 1932, will help to get this matter straight; let us begin with Wiese's statement:

> "The opportunity to accompany the present volume with a few words of introduction is to me a source of unusual pleasure and gratification, for this treatise is an amplified adaptation of both my *Beziehungslehre* and *Gebildelehre* . . . and is especially designed to correlate certain recent American and German trends in sociology. Howard Becker . . . was for a time an exchange fellow . . . of the University of Cologne. During his stay, acquaintance made possible numerous discussions of the topics covered in this book, and I am convinced that as a consequence of his adaptation American readers will be put in touch with systematic sociology in general and with my own efforts in particular.
>
> "American adaptation is the more welcome because I feel that my own conception of sociology is related to that prevalent in the United States. . . ." (p. vii).

Following this, I discussed the nature of the adaptation at some length; this passage may be especially pertinent:

"Although this treatise is an amplified adaptation, as Professor von Wiese graciously notes, and not a mere translation, my part is entirely secondary. 'Amplified' does not imply any *essential* addition to the original framework, nor does 'adaptation' imply any essential alteration" (p. viii).

Later I shall have more to say about what was actually done; just now let me deal with one correction made in the 1950 edition. The term "amplified" is an erroneous one; it sounds like a description of a radio loud-speaker —and in any case, Wiese can make himself heard unaided! I therefore substituted on the title page the term "augmented", so that the present title—no other change was made in it—should be listed in bibliographies in this fashion:

Howard Becker, *Systematic Sociology on the Basis of the* Beziehungslehre *and* Gebildelehre *of Leopold von Wiese, Adapted and Augmented* (reissued, Wisconsin edition, with 1950 preface added, at Gary, Ind.: Norman Paul Press, 1950. Originally published at New York: John Wiley and Sons, 1932).

On the back of both editions, however, the title reads: Wiese-Becker, *Systematic Sociology*. This was done in order to make clear, as I thought, the fact that the book is an augmented adaptation. What I had in mind is the practice of some publishers, chiefly European, in so indicating that fact. For example, the great encyclopedia of classical antiquities, originally edited by a scholar named Pauly, was later extensively adapted and augmented under the editorship of a successor named Wissowa, and references to the Pauly-Wissowa have since become standard. (Recently, by the way, Wissowa has had a successor; the designation now runs Pauly-Wissowa-Kroll.) This European precedent, however, was not as widely known as I imagined; the whole matter should have been made clear in the preface. In ordinary citation, rather than in full bibliographical listing, reference to Wiese-Becker, *Systematic Sociology,* is the correct form; Wiese *and* Becker gives me more credit than is actually my due, although unfortunately most citations are made that way.

Some inquiries have been made as to why I used, and still use, Wiese rather than *von* Wiese. The answer is simply that German practice, when dealing with persons of eminence, and at times even with ordinary mortals, is to drop the "von" when only the last name is given. For example, the standard reference is to Bismarck, not to von Bismarck. When using the full name, however, it is Otto von Bismarck, and so likewise Leopold von Wiese (the latter's full name, incidentally, adds "und Kaiserwaldau", but

this is usually omitted). When a title replaces the first name, however, the "von" is used: Prince von Bismarck, Professor von Wiese. No disrespect is indicated, then, but rather the contrary, by using Wiese instead of von Wiese.

Enough of these pedantries and particularisms; persistence in them would indicate need for Dr. Moreno's professional ministrations.

Another misunderstanding is with regard to the extent and nature of the adapting and augmenting. Here again quotation from the 1932 edition will perhaps serve the purpose:

> "(Where adaptation is concerned, what) . . . has been done can best be shown through analogy:
>
> "Folk songs are so saturated with local allusions of all kinds, most of which find no place in recorded history, that the stranger is at a loss to understand the rich emotional freightage of seeming commonplaces. If he is to participate to the full, such songs must be adapted rather than translated; not only words but also allusions must fit into his non-material culture. . . .
>
> "Now the present treatise is not lyric, let us hope, but . . . (wherever) possible the American equivalents of German writers referred to in the text or the footnotes have been substituted or added, and many more who make contributions for which there are no German equivalents are taken into account. Some indication of this is given by the fact that in Part One alone (119 pages out of a total of 772) over forty names of American writers not mentioned anywhere in the German basis of this adaptation occur among them such important figures as Bernard, Dewey, MacIver, Mead, and Ogburn (plus Allport, Bentley, Kroeber, Watson, Young, *et al.*). Again, terminology has been modified (or introduced) in order to evoke American as well as German connotations; neuropsychic pattern, action pattern, socius, temperamental attitude (plurality pattern, secular society, sacred society, catastrophic change, circumscribed processes, sociation, contravention, ecclesia, denomination, cult, culture case study) and many similar terms give all the meaning of the basic German *and* a number of additional implications highly important if American and German sociology are to be correlated" (pp. viii-ix).

In a certain sense, some of what I have called adaptation could be viewed as augmenting the basic treatise, but in referring to "augmented" I proposed to indicate that a number of closely interwoven substantive additions had been made.

For example, not only were American illustrative materials substituted for German in many passages, but over and above these a considerable number of American illustrations was provided for points that seemed in

need of concrete referents of some kind. Further, I added many hints as to possible parallels, qualifications, expansions of analyses, and a large quantity of quotations from and citations of relevant authors.

Beyond such augmenting in less readily distinguishable ways, probably amounting to well over a hundred pages, many relatively self-contained sections, some of them twenty or twenty-five pages long, occasionally with my own authorship indicated, were embodied in the book. A partial list includes: "Individuation and Population Movement" (pp. 319-344); "The Development and Interaction of the Ecclesia, the Sect, the Denomination, and the Cult" (pp. 624-642); "The Connection between Abstract and Concrete Crowds Illustrated and Analyzed" (pp. 458-464); "Sociology is Not a Normative Science" (pp. 3-8); "Dynamic and Static Relations" (pp. 52-55); "Sub-Processes of Amalgamation" (the presentation of sacred and secular societies, pp. 222-226); etc.

The total of this self-contained sort of augmenting runs to something more than to seventy-five pages, or about one-ninth of the text proper; all augmenting, of whatever kind, but leaving adaption out of account, comprises about one-fourth. The entire book is about one-third longer, or a trifle more, than the German basis; some of this expansion may be the result of the fact that my style, unfortunately, is not terse.

Among the passages that augmented the work attention should perhaps be called to one that may be of special interest, appearing on pp. 57-59; it is a very free adaptation of Max Weber's comments on the nature of "understanding." One reading of it is enough to show how nonsensical is Abel's article on "The Operation Called *Verstehen*".

And now, let it be clearly understood that in spite of all adapting and augmenting, there was no effort on my part to "spring the framework of the system" in any way. Here is what I said in 1931:

> ". . . it is hoped that the only result has been to put the *Beziehungslehre* and *Gebildelehre* in such form that they will make the maximum impression on American readers; I have spoken as I conceive Professor von Wiese would speak if he were in the American setting. *There has been a consistent attempt to refrain from injection of my own point of view,* although with regard to some matters, notably the relation of history and sociology and of cultural anthropology and sociology, this has been quite difficult. Technical reasons make it impossible to indicate the numerous changes I have made, and the reader must therefore be chary of blaming Professor von Wiese for what may be my fault" (p. x).

In 1950, in the preface of the reissued Wisconsin edition, I went into

some detail as to what I would do if I were bringing out a revised version with full freedom to make changes in accordance with my own present conceptions; the curious reader is referred to that statement for whatever it may be worth.

It next seems advisable, even if a bit beyond the confines of Dr. Moreno's request, and altogether apart from the question of the adequacy or inadequacy of the *Systematic Sociology* as an augmented adaptation, to make a few comments on the merits of Wiese's work.

(1) He not only revived interest in Simmel, but notably improved upon the latter's treatment of many themes, particularly with regard to small groups.

(2) His consistent attention to social processes made his treatment of social structures (plurality patterns) much more useful for analytic purposes than the static treatments then—and even now—widely current. Although an economist by early training, he never committed himself to equilibrium theory.

(3) Although undoubtedly influenced by Spencer, he went far beyond him in useful sociological application of the concepts of structure and function—in fact, he is still in advance of most present-day adherents of the structural-functional school. Witness the following passages (all in *Systematic Sociology,* and owing little or nothing to me): pages ix, 6-7, 111-113, 119, 215, 252-257, 364, 401-412, 430, 443, 476, 487, 493-495, 500-501, 502-505, 526-527, 540-541, 578-582, 594, 599-600, 602, 606, 618-619, 649, 650-651, 656, 698-699, and many references elsewhere.

(4) He was one of the few systematic sociologists of his time who did more than pay lip-service to empirical evidence. His general treatises were firmly grounded on hard facts, and he persistently carried on monographic studies in collaboration with his students and colleages. Sorokin's disparaging reference to him as a "formal" sociologist, damning by its ordinary meaning alone to enthusiastically informal Americans, also carried the invidious implication of purely deductive system-building. Wiese used deduction, certainly, but never relied on it exclusively or even primarily.

(5) One of the few meaningful distinctions between social institutions and social structures we owe to Wiese; see *Systematic Sociology* on institutionalization. He was at pains to point out that "an institution is what it does," and that what it does is to carry out functions of certain kinds that keep the social system of which it is a part in operation. In conjunction with

his treatment of institutions, but also with that of structure and function (see 3 above), he also distinguished between different aspects of function by means of the categories of construction and destruction. As any reader can plainly see (use index and table of contents of *Systematic Sociology*), these are equivalent to Merton's function and dysfunction or Levy's eufunction and dysfunction.

Many more such notable contributions could be credited to Wiese if time permitted, but perhaps I have said enough already to make it clear that in my opinion Wiese's significance is much greater than present American inattention or *Todschweigen* would lead the unwary to believe.

And now, in conclusion, I should like to trespass a little farther beyond the confines of Dr. Moreno's request, and make a few extra-sociological remarks about Wiese's personal position on matters of political, racial, and similar character. These may be superfluous, but from time to time one encounters allegations that are utterly baseless and that should be labeled for what they are; namely, careless gossip or downright lies.

The opening of the first World War found Professor von Wiese at the Düsseldorf Academy for Municipal Administration, where he had already been for some time. In the summer semester of 1915 he accepted a professorship at the Cologne School of Commerce and Finance, which in 1918 was made part of the newly-established University of Cologne.

He encountered difficulties both at Düsseldorf and Cologne during World War I because of his refusal to sign the famous *Es ist nicht wahr* war responsibility disclaimer of the German intellectuals, and also because of a "cosmopolitan" book, *Gedanken über Menschlichkeit,* the publication of which was delayed nearly a year as a result of censorship.

In the two decades prior to World War II, Wiese had built up a flourishing journal and an effective research organization, but political developments soon dimmed the bright prospects for sociology at Cologne, inasmuch as he had always held the Nazis in high disfavor, and his sentiments were reciprocated. After the seizure of power the *Cologne Quarterly,* under Wiese's editorship, had to suspend publication, he was shouldered out of all important lecturing, and his seminar was disbanded.

His dislike of Nazis and Nazi doctrine was not merely confided to a small circle of intimates; that kind of "opposition" was cheap. Wiese told the world what he thought in his massive *System der allgemeinen Soziologie,* which was published late in 1933—and which should be consulted by any-

one wishing to see in what respects he had changed the analysis presented in the *Beziehungslehre* (1924) and the *Gebildelehre* (1929). Note the "late in 1933"; *after* the Nazis came to power Wiese dared to print this:

> "A hierarchy of races with generally valid differentials in essential worth that are objectively demonstrable does not exist. Here everything is in the realm of faith, and chiefly in the realm of superstition and collective arrogance" (last page of the *Allgemeine Soziologie*).

No more need be said.

PART IV

METHODS AND TECHNIQUES

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I. SOCIOMETRY IN EDUCATION

CHILDREN'S PERCEPTION OF FRIENDS AND NON-FRIENDS[1]

MARY L. NORTHWAY AND JOYCE DETWEILER

That "we see things not as they are, but as we are" has become a psychological platitude.[2] That "we see people not as they are, but in terms of their relationship to us" should logically follow the first statement. That it can be shown experimentally, to do so is the theme of this article.

As Sullivan states, "It would be the great miracle of all time if our perception of another person were . . . accurate or exact" (6). It is our contention that if the perception of a coin is influenced by the value that it has to the perceiver (2) then the way in which another person is perceived depends on the value he has to the person perceiving him. As we have said elsewhere, "Social value, like beauty, lies in the eyes of the beholder" (5).

One may demonstrate the truth of this argument by ascertaining how individuals perceive their friends and comparing this with their perception of those who are not their friends. An individual's friends and non-friends may be discovered by the use of a sociometric test. How he perceives them may be determined by asking him to rate them in terms of how he sees them to embody certain qualities. This, in general, is the plan of this investigation.

Sociometric status per se has often been related to personality characteristics (1, 4, etc.). Here, however, we were concerned with the effect one person's sociometric relationship to another has on the one's perception of the other, so we ignored the sociometric status of either the chooser or the chosen; rather, for each subject we listed *her* friends (those whom she chose on a sociometric test) and *her* non-friends or indifferents (those whom she did not choose).[3] We then asked her to rate a representative number of *her* friends and *her* non-friends on ten traits considered to be culturally desirable.

[1] The study was carried out by Miss Detweiler as part of the requirements for the M.A. Degree, University of Toronto, Department of Psychology. The cooperation of the Bishop Strachan School, Toronto, in providing the subjects, is gratefully acknowledged. This report is part of the work on social development of the Institute of Child Study, Toronto, conducted under Canadian Federal Health Project 605-5-147.

[2] This statement has been attributed to various sources. Our first acquaintance with it was from the textbook by R. S. Woodsworth, Introductory Psychology.

[3] There is a greater variety of sociometric relations than there are words to define them. A friend here is used to mean those whom an individual chooses most highly on a sociometric test, whether reciprocated or not; a "non-friend" or indifferent as those whom an individual does not mention.

Also, rating of others has been shown to be influenced by one's evaluation of oneself (3). So we asked each subject to rate herself on each of the traits. This self rating became the pivot point and our measures were not the absolute ratings the subjects gave their friends and non-friends, but rather, the number of times the subject rated friends and non-friends above or below her own self-rating. The hypothesis was that one will perceive one's friends as possessing desirable qualities to a greater degree than oneself, and one's non-friends as possessing these to a lesser degree. Or, more specifically, one will rate one's friends higher and one's non-friends lower than one rates oneself on qualities which are considered desirable by the group. In other words, the rating given will depend on the sociometric relationship from the rater to the ratee.

The Plan

Individuals were required to rate themselves, "friends" and "indifferents" (sociometrically determined) on ten desirable qualities using a five-point rating scale. The number of times one rated one's friends higher or lower than oneself and the number of times one rated one's non-friends higher or lower, were calculated and the difference between these ratings was tested by means of the X^2 test.

The Experiment

Subjects 36 girls in seventh grade in a girls' private school who had been together for over three months. Data from 32 are used in the analysis.

Method (1) A three criteria, three choice standard (5) sociometric test, adapted to the classroom setting was administered. The criteria were—spending recess, working on a geography project, going to the movies.

(2) A rating scale was set up as follows: at a previous session the children discussed with the experimenter words which they thought were best to describe good qualities of people. From 17 words, the class selected the 10 they thought were best. These were: GENEROUS, CHEERFUL, POLITE, DEPENDABLE, COOPERATIVE, CONSIDERATE, GOOD SPORT, FRIENDLY, HONEST, HUMOROUS. Each of these was then set up into a five point scale: extremely, very, average, not very, not at all.

(3) The sociometric data were analysed using standard methods. From these, for each child, the two children whom she chose most highly were selected as her friends and seven whom she did not mention at all were selected as her indifferents. The average sociometric status of the two friends was equated as closely as possible with the average sociometric status of the seven indifferents. (To rate all the children would have been too long a task.

Therefore 2 friends, which was about 1/3 the number of different children each child named, and 7 indifferents which was about 1/3 the number of children not named on the sociometric test were selected.)

(4) Each child was given a set of ten copies of the rating scale. The first had her own name on it; the second to fourth and sixth to ninth, the names of girls to whom she was indifferent; and the fifth and tenth, the names of the two girls whom she chose most highly.

The children were instructed how to use a rating scale. Each girl was given her particular series. She then rated her seven indifferents, two friends and herself on each of the ten characteristics.

Analysis of data

Using the self rating as a base, each rating given to friends and indifferents was scored as higher than "+", lower than "—" or the same as ° the self rating. The number of times friends and indifferents were rated above, below or the same as the self rating was calculated and is shown in Table I.

From this table it is seen that there is a difference between the ratings given to friends and to indifferents. This difference is significant at the .05 level or better for 9 of the 10 characteristics, and for the mean.

Inspection of the data shows that on 9 of the ten characteristics one rates one's friends higher than oneself more frequently than one rates them lower. One rates one's indifferents lower than oneself more often than one rates them higher. This is shown more clearly in Table II. This shows the difference between the number of times friends are rated higher and lower than the self, and the difference between the number of times indifferents are rated higher or lower than the self. It is clear from this that friends are more often rated higher than oneself throughout 9 of the characteristics, and indifferents more often rated lower on the ten.

Thus we may conclude that one rates one's friends and one's indifferents differently. Friends are rated higher and indifferents lower than oneself on characteristics defined by the group as desirable.

Stated in our original terminology, children perceive their friends as embodying culturally desirable qualities to a greater extent than they themselves and perceive those to whom they are indifferent as possessing of these qualities to a lesser degree than themselves.

Conclusion

Thus our original contention is demonstrated; we perceive people in terms of their social value to us. It might be suggested, to use Moreno's

TABLE I

NUMBER OF TIMES FRIENDS AND INDIFFERENTS ARE RATED HIGHER, LOWER, AND THE SAME AS THE SELF-RATING ON EACH CHARACTERISTIC

		Generous			Cheerful			Polite			Dependable			Cooperative			Considerate		
	Cases	Higher	Lower	Same	Higher	Lower	Same	Higher	Lower	Same	Higher	Lower	Same	Higher	Lower	Same	Higher	Lower	Same
Friends	2	32	10	22	24	14	26	32	15	17	29	14	21	26	12	26	30	13	21
Indiffs.	7	66	70	88	47	90	87	62	76	86	63	93	68	72	87	65	69	73	82
X^2			9.36			10.07			18.40			9.94			9.03			6.46	
Level of confidence			*.01*			*.01*			*.001*			*.01*			.02			.05	

	Good Sport			Friendly			Honest			Humour			Average of Characteristics		
	Higher	Lower	Same	Higher	Lower	Same	Higher	Lower	Same	Higher	Lower	Same	Higher	Lower	Same
Friends	27	9	28	16	18	30	23	11	30	27	14	23	26.6	13.0	24.4
Indiffs.	65	67	92	25	114	25	61	75	88	75	79	70	60.5	82.4	81.1
X^2		7.58			13.33			13.17			4.08			7.37	
Level of confidence		.05			*.001*			*.01*			.20			.05	

term, that *tele* is the fundamental factor underlying our perception of others. We see them, not as they are; nor yet as we are; but as they are in relation to ourselves.

TABLE II

DIFFERENCES BETWEEN HIGHER AND LOWER RATINGS GIVEN TO FRIENDS AND INDIFFERENTS (# HIGHER — # LOWER)

Characteristics	1	2	3	4	5	6	7	8	9	10	Total
Friends	22	10	17	15	14	17	18	— 2	12	13	+13.6
Indifferents	— 4	—43	—14	—30	—15	— 4	— 2	—89	—14	— 4	—21.9

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A STUDY OF CONSTANCY OF SOCIOMETRIC RANKS AMONG COLLEGE STUDENTS OVER A TWO-YEAR PERIOD

MERL E. BONNEY

The constancy of sociometric status of individuals in all types of groups is a persistent problem for all sociometrists, and one which has some practical implications. The persistency of this problem is well shown in a comprehensive survey of over fifty studies dealing with the constancy and reliability of sociometric responses presented in this journal recently by Mouton, Blake, and Fruchter (14).

The practical implications of this problem bear on the question of the extent to which we may assume that particular individuals tend to maintain their same relative positions as friends or as desired associates in the same or similar groups over varying periods of time. If it can be shown that most

individuals maintain similar sociometric ranks in the same or similar groups over considerable periods of time, such as several months, a year, or longer, then we could have more confidence that there are certain kinds of total persons who tend to consistently elicit favorable or unfavorable responses from their peers in reference to particular kinds of activities or criteria. If this point can be established we could in turn have more confidence in our ability to predict that certain individuals would or would not, in the future, be able to perform successfully in specified social roles.

The burden of evidence from the studies reviewed in the reference above by Mouton, Blake, and Fruchter is strongly in favor of the conclusion that one's sociometric status in a particular group is characterized by a fairly high degree of stability, especially under certain conditions, such as when the subjects tested are older children or adults, have known each other quite well at the time of the first testing, and are allowed a wide range for choosing.

Purpose of This Study and the Techniques of Investigation

The primary purpose of this report is to present data on the constancy of sociometric ranks among students in the writer's psychology classes over a period of two years—from the spring semester 1953 to spring semester 1955. All these students responded to the same sociometric instrument and to the same criteria. The instrument consisted of one or two sheets of paper containing a list of the names of all students in a particular class, a brief statement of directions, and a column to the right of the names in which each student checked his first, second, and "other" choices of students with whom he would prefer to work on a class project, a committee, or any form of small group which might be formed as a part of the class work. Thus, the criteria in all classes were of a socio-group nature, as this term is defined by Jennings (11).

The directions emphasized that more than one name could be listed on both the first-choice and second-choice levels. This was done because it can be shown that most people include more than one person as a "first-level preference" or as a "second-level preference" on any criteria; that is, they regard several persons with an equal degree of intensity for both first and second-level preferences (and probably other levels as well, but with less degree of certainty). As a matter of fact, most students included in this study gave more than one choice for both first and second-level preferences. A few put three or four names in each category.

In arriving at a score for each student for "total choices received" only

first and second-level preferences were utilized (the "others" category being ignored), and each choice regardless of level was counted as one point. Extra weighting was not given to first-level choices because it can be shown that weighting makes practically no difference in the *relative ranks* which the members of a group will attain (6).

Considerable attention, however, was paid to first and second-level preferences and to the "other choices" in the actual formation of the small groups for class work. Every effort was made to put those persons together who gave each other a first-level choice. Also, those students who received no choices were put in a group containing at least one person whom they chose in first place. All classes were assured at the time of the sociometric testing that their choices would be utilized within a week or two for the formation of groups. This assurance provided motivation for sincere choosing.

Since the sociometric instrument was administered primarily for functional rather than for research purposes, it was not given at exactly the same time in each semester. However, it was administered in all classes somewhere between the third and the sixth weeks.

The Subjects

The subjects of this study were 38 students (18 men and 20 women) who were in two or more consecutive classes taught by the writer during 1953 to 1955, or who were in two classes during one semester. The particular classes from which these students were drawn were "Schools of Psychology" and "Social Psychology" on the sophomore level and "Abnormal Psychology" and "Psychology of Personality" on the senior level. However, in selecting the students to be used as subjects for the inter-class comparisons over successive semesters some students were used more than once since they were involved in more than two successive classes. This fact is evident from the number of cases given in a table subsequently presented. A summary of these data shows that 72 cases were included in all the inter-class comparisons.

Changes in Personnel of Classes

In order to determine the extent to which each successive class was a new group over the preceding class, the proportion of new students in each succeeding class was calculated. These proportions of new students varied from 55 per cent to 94 per cent, with a median of 88 per cent. In only three instances did the proportion of "same students" in any two succes-

sive classes amount to 20 per cent or more. From these figures it is evident that all of the "follow-up" classes constituted sufficiently new social situations to provide plenty of opportunities for redistributions of sociometric ranks as compared with the preceding classes.

Likewise, the proportions of "same students" in any two classes taught during one semester was less than a third in all instances, and was most frequently only about 12 or 15 per cent.

The total number of students in the respective classes included in this study varied from 21 to 36 with a median of 25. The total number of individual students who made choices on the sociometric criteria over the two-year period was approximately 225.

Hypotheses to be Tested

Before working up the data for this study, the writer set up the following hypotheses which he believed these data would verify:

1. The average or median differences in sociometric ranks for students followed over any two consecutive semesters will not be more than 3 or 4 points.
2. Over the two-year period there will be more cases of "marked gains" in sociometric ranks than of "marked losses", and most of the losses will be registered by students who are non-psychology majors of relatively low academic records in the classes studied.
3. Most of those showing the most marked fluctuations in sociometric ranks will be students who were new in this college at the time of the first testing.
4. Those who were high on the first sociometric testing will show greater stability in their subsequent ranks than will those who were low on the first testing.
5. Those students who were most consistently high in sociometric ranks will have, as a group, a higher grade average than will those who were consistently low in sociometric ranks.

Changes in Sociometric Ranks

Data bearing on the extent of changes in sociometric ranks over successive semesters are given in the following table.

The data in this table show a wide range of variation in sociometric ranks for different individuals over the two semester intervals. A few persons made practically no changes while a few others changed as much as 14 to 17 ranks. However, the medians of these differences between two

classes in the same semester, or between two successive classes, over the two-year period, are all in fairly close accord with the first hypothesis stated above. Two of the median differences are a little greater than was anticipated while one was considerably less.

DIFFERENCES IN SOCIOMETRIC RANKS OVER SUCCESSIVE SEMESTERS

Time Intervals	No. of Cases	Range of Differences in Sociometric Ranks	Median of Differences in Sociometric Ranks
Two Classes in Same Semester	14	.5-14	4.25
Spring '53 to Fall '53	10	1-11	1.70
Fall '53 to to Spring '54	17	0-17	2.50
Spring '54 To Fall '54	17	.5-16	4.00
Fall '54 to Spring '55	14	.5-14	4.50

It is difficult to say whether or not the median changes in sociometric ranks given in the above table are large or small, since the writer knows of no other data which are sufficiently similar to warrant comparison. It does seem, however, that a conclusion of "relative constancy" is justified since it is obvious that these changes could easily have been much greater than they were.

When the large changes in class personnel described above are considered, it seems to this writer that the data in the above table support the view that a person's choice-status in regard to a particular kind of criterion is something which is, in most instances, quite characteristic of him as an individual and is not something which is primarily due to the particular situation or group he is in.

This conclusion is supported particularly by studies conducted by the writer (5) and by Olson (16) among elementary school children, by Jennings' study in the New York State Training School for Girls (10, p. 57), and by Bell and French's study among college students (2). In the latter study a sufficiently high correlation (.75) was found between the choices received by the same individuals for leadership roles under a variety of conditions to warrant the following concluding statement by the authors:

"If similar results continue to accumulate for other types of situations, the recent trend toward emphasis upon situational factors in leadership may require some re-evaluating."

Marked Gains and Losses in Sociometric Ranks

Hypothesis number two was that over the two-year period there would be more students showing marked gains in sociometric ranks than there would be showing marked losses, and that most of those showing losses would be non-psychology majors of relatively low academic standing.

In order to test this hypothesis it was arbitrarily decided that a "marked gain" in sociometric rank would mean a change upward of at least six ranks over two or more successive classes. Likewise, a "marked loss" was defined as a change downward of at least six ranks over two or more successive classes.

Using these criteria it was discovered that 11 students registered marked gains while only 6 registered marked losses. The median rank gain of the 11 students was 9, whereas the median rank loss of the 6 students was 6.5. Thus, the gains per student were greater than the losses per student. In calculating per cents of students showing marked gains and marked losses, only 35 of the 38 students involved in this follow-up study could be used, since three of them were in two classes in the same semester but were not in two classes in succeeding semesters. On this basis the above data show that 31.4 per cent of these 35 students raised their sociometric positions by six ranks or more, whereas 17.1 per cent fell six sociometric ranks or more.

This finding supports the first half of hypothesis number two, and is in accord with the results of other studies (1, 5, 7) in two respects: (1) in showing that when work in small groups or committees is introduced into a larger group the positive sociometric gains over a period of time considerably outweigh the sociometric losses, and (2) in showing that sociometric losses for some individuals, under the conditions defined in the preceding sentence, will almost certainly be found, since to know some people better is to dislike them more.

The second half of hypothesis number two was not sustained by the present data, since five of the six students who showed "marked losses" in sociometric ranks over two semesters or more were psychology majors, and their grade average over the two year period was only slightly lower than the corresponding figure for those who showed "marked gains." One of the six heavy losers was almost a straight "A" student, while two of those showing the largest gains were consistently "C" students.

The finding that practically all of those showing marked losses in sociometric ranks were psychology majors should have been anticipated by the writer in formulating the number two hypothesis, since several studies (10, pp. 87-88) (including some unpublished material by the writer) have shown that those who are least desired as friends or as work-associates are much more likely to be found among those whom we frequently contact than among those whom we contact only occasionally or for short time-intervals. Since most of the psychology majors contacted other psychology majors more often than non-majors (at least in academic situations) and since most of them took more consecutive courses, it is not surprising that practically all of those who registered marked losses, as well as practically all of those who registered marked gains (ten out of the eleven involved), were psychology majors.

One final point of incidental interest under this heading is that, whereas the two sexes were well balanced among the "marked gainers", all six "marked losers" were men.

Length of Time in Student Population

Hypothesis number three stated that most of the students showing marked fluctuations in sociometric ranks would be students who were new in North Texas State College at the time they first participated in the sociometric testing.

This hypothesis was tested by checking the entrance records of 16 students whose sociometric rankings showed the most fluctuations, whether up or down, over two or more semesters. This checking revealed that only one of these 16 students was a new enrollee in this college at the time he participated in the first sociometric testing. Six of them had been in this college for three semesters prior to the first sociometric testing in the spring of 1953. The remaining 9 had been enrolled for one or two semesters previous to their first participation in a sociometric testing.

As a further check on the factor of length of time in the student population, the 16 "most fluctuating students" were compared with the 16 "most sociometrically stable students" in regard to time of entrance into this college. This comparison showed only one minor difference, namely, that there were two more of the "stable group" than of the "fluctuating group" who had been in this college three semesters previous to the spring term of 1953.

All of the above data are consistent in showing that hypothesis number three must be denied.

This finding is in accord with other studies (3, 9, 17) which have shown length of time in a particular group to be a very undiscriminating factor in reference to high or low choice-status in that group. Of course, the time factor is not completely irrelevant, since an individual must be in a group long enough to establish some contacts before he can be properly assessed, either as a work-associate or as a friend. The length of time required would naturally vary greatly with groups.

Relative Constancy of Those High and Those Low in Sociometric Ranks

Hypothesis number four stated that those who were high in sociometric ranks on the first measurement would maintain greater constancy than would those who were low on the first measurement. This result was anticipated because other investigations (7, 12) have shown that there is greater probability of persons of low choice-status raising their sociometric ranks within a particular group than there is of persons of high choice-status lowering theirs. This is most likely to be true in groups in which some socializing efforts are introduced.

In testing the above hypothesis, a student was considered to be low on the first sociometric testing if he fell at the 12th rank or lower. Among the eighteen students who met this criterion the median rank on the first testing was 18.

In testing the above hypothesis, a student was considered to be high on the first sociometric testing if he fell within the top nine ranks. Among the sixteen students who met this criterion the median rank on the first testing was 6.

In testing for raising of ranks among the "low students" it was arbitrarily decided that any student would be considered to have "significantly raised his rank" if, in either of the two succeeding semesters, his rank improved enough to put him in the high-ranking category as defined above. On this basis nine of the eighteen low students, or 50 per cent, achieved a "significant improvement" in sociometric ranks.

In testing for lowering of ranks among the high students, it was arbitrarily decided that any student would be considered to have "significantly lowered" his rank if, in either of the two succeeding semesters, his rank fell enough to place him in the low category as defined above. On this basis, three of the sixteen originally high students, or 18.7 per cent, fell into the low category.

These figures support hypothesis number four since they show much

greater constancy of choice-status among those students ranking high on the first sociometric test than among those ranking low. In fact, the tendency of the highs to stay high as compared with the tendency of the lows to stay low is almost three to one.

This finding in regard to the greater stability of those who are relatively high in choice-status carries some practical implications for anyone concerned with efforts to change a sociometric structure, since, as indicated in the first paragraph of this section, it is quite likely that most of the changes in a sociometric structure will be made by individuals who are low in choice-status at the start. Some low ones, however, and especially those who are *rejects* as opposed to *isolates*, will nearly always continue to rank low in spite of numerous socialization efforts. Occasionally a person of high sociometric position (even in groups in which the members know each other quite well) will "fall from grace", even to below average on the same general type of criterion, but this phenomenon is definitely rare.

Relationship with Academic Grades

Hypothesis number five was that those students who were most consistently high in sociometric ranks from class to class would have a higher grade average than those who were most consistently low in sociometric ranks. This statement was not made stronger than it is because it is known from studies reported by the writer and others (4, 8, 13) that when total school groups are considered the correlations between grade points and sociometric scores are not large. However, when extremes in sociometric distributions are contrasted, those who are high are nearly always shown to have considerably higher grade averages than those who are low.

The chief reason for assuming this hypothesis to be true was that, since the sociometric choices were made in reference to carrying out a class assignment, it was reasonable to assume that those students who had acquired a reputation of being "good students" would be most sought after as committee associates. Other studies (18) have shown that one of the important factors determining choices on socio-group criteria is the belief on the part of the members of a group that those to whom they give the major portion of their choices possess to a fairly marked degree the kind of abilities necessary to achieve a particular objective.

In order to test the above hypothesis more specifically, fifteen students were selected who were in the upper third in sociometric ranks in two or more different classes, and these were contrasted with fifteen students who were in the lowest third of two or more different classes. No name was used

more than once in either list. Academic grade points were based on the course grades which the students made in the second of two courses under comparison for each two-semester sequence.

For the purpose at hand the following point system was used: A = 4, B = 3, C = 2, D = 1, F = 0.

The fifteen consistently high students (in at least two classes) had a grade range of from A to C with an average of 3.2, which is a little better than a B average. On the other hand, the fifteen "consistently low" students had a grade range of from A to D with an average of 2.5, which is mid-way between a C and a B average.

These findings are in accord with the evidence from other investigations, as indicated above, and they sustain hypothesis number five.

However, the point should be emphasized that the reputation of being a "good student" was by no means the only important factor determining the number of choices received. This fact is apparent in the overlapping of the ranges of the two contrasted groups of students, since a few of the sociometrically high students had C grades and a few of the sociometrically low students had A grades. Obviously these students were heavily influenced in their choices of work-associates by their knowledge of each other as *persons*, as well as by their knowledge of each other's academic reputations.

Summary

This study involves follow-up data on 38 students in reference to the constancy of their sociometric ranks in the writer's psychology classes over a period of two years.

The evidence presented in this study shows that the median differences in sociometric ranks over any two successive semesters (during the two-year period) varied from 1.7 to 4.5. This finding was interpreted as supporting hypothesis number one, as stated.

The number two hypothesis proposed for this study was partly supported since there were nearly twice as many students who registered "marked gains" in sociometric ranks over two or more semesters as there were who registered "marked losses"; but the second part of this hypothesis was not sustained since most of those who showed "marked losses" were not "non-psychology majors of relatively low academic records" but were, instead, nearly all psychology majors whose academic records were only slightly lower than similar records for those who were "marked gainers" in sociometric ranks.

"Marked fluctuations in sociometric ranks", either up or down, were judged from the evidence presented to be unrelated to length of time the students had been enrolled in North Texas State College. This conclusion is contrary to the assumption set up in the third hypothesis.

A much stronger tendency (almost 3 to 1) was found for sociometrically high individuals to remain high in subsequent testing than for sociometrically low individuals to continue to be low. In other words, most of the marked changes in choice-status over two or more semesters were made by students who originally tested low. This finding completely sustained hypothesis number four.

Those students who were consistently high in sociometric ranks were found to have, as a group, a higher grade average than those who were consistently low in sociometric ranks. This finding was predicted in hypothesis number five. However, the overlapping in ranges of the distribution of grades made by the two contrasted groups led to the conclusion that a student's reputation of being a good, average, or poor student was certainly only one factor which influenced the number of choices which he received as a desired group-work associate.

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THE USE OF SOCIODRAMA IN TEACHING SOCIOLOGY

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In this paper a report is given of an experiment conducted by the writer in testing some simple forms of sociodrama as a teaching technique for use in a beginning class in sociology. A unique feature of this experiment is that a graduate class in a course in Problems of Teaching Sociology was the laboratory in which the members planned and participated in sociodramas which they might present to beginning college classes in sociology as samples of what these lower division college students might develop as a means of understanding social conflict, cooperation, and other sociological processes and concepts.

Several members of this graduate group volunteered to make sociodrama plans.[1] Each was asked to plan a sociodrama dealing with a conflict situation, either within a group or between groups, and to invite as participants four or five other members of the class not already committed to participate in one of the other sociodramas. In some cases the role players took roles expressing opinions and attitudes different from or opposite to their usual roles in daily life.

[1] Special credit in this connection goes to Margaret Eager, Eunice Loseff, I. Roger Yoshino, Jerome Green, and James Wilson.

Attention was given to the related literature on sociodrama and teaching. For example, Bristow has used sociodrama with children to help them understand their teachers, their parents, and their siblings.[2] Martin has reported how through the use of sociodrama, children are enabled to obtain social insight not usually resulting from recitations and reading.[3] M. W. Wood illustrates the use of sociodrama in helping individuals to increase understanding of family relationships.[4] H. D. Mugaas describes how sociodrama depicted the problems in the "Jones family" where a small boy had an indulgent father and an older sister who "sided with her mother but feared her father." The sociodrama scenes indicated that the conflict between the parents was the key to the deviant behavior of the boy and his sister in school.[5] C. C. Bowman reports on how he has used sociodrama "as an educational device with college classes studying sociology," and how it "introduces processes of social interaction directly into teaching and learning."[6]

J. L. Moreno, the pioneer in this field, states that sociodrama is a method "for the analysis of social conflicts," and that its exploratory value is only "one half of the contribution that it can make," for it can "change attitudes as well as study them." It "subjectifies the experiences" of others.[7] It is "a deep action method dealing with inter-group relations and collective ideologies."[8] A. Katona explains that in sociodrama "the actors represent the group rather than individual personalities."[9] Gertrude Wood refers to the actors in a sociodrama as representing "type situations," and it might be added, type reactions.[10]

Helen H. Jennings describes sociodrama as giving "others insight into

[2] William H. Bristow, "Sociometry, Sociodrama, and the Curriculum," Sociatry, II:74.

[3] Charles A. Miller, "Sociodrama for the Ninth Grade of Firestone Junior High School," typewritten document, University of Southern California Library, 1950.

[4] M. W. Wood, "Use of Role Playing in Teaching Family Relationships," *Practical Home Economics,* 31: 24.

[5] H. D. Mugaas, "Sociodrama Describes Problems of the Jones Family," *Occupations,* 30: 654.

[6] C. C. Bowman, "Role-playing and the Development of Insight," *Social Forces,* 28: 199.

[7] J. L. Moreno, *Sociodrama, a Method for the Analysis of Social Conflicts,* Psychodrama Monographs No. 1. New York: Beacon House, 1955.

[8] J. L. Moreno, *Who Shall Survive?* New York: Beacon House, 1953, pp. 87, 88.

[9] A. Katona, "Social Drama in Education," *Educational Forum,* 13:465.

[10] Gertrude Wood, "Demonstration and Discussion in Sociodrama," *Occupations,* 30:648.

interpersonal problems" and quotes Dr. Margaret Brown to the effect that sociodrama has techniques "for understanding the cultural equivalents in different social situations."[11] These conflict situations occur between groups and also within groups.

In the sociodramas being reported here, the instructor acted as a "drama director,"[12] but as inconspicuous as possible. The four or five actors in each sociodrama were limited in time in order that the whole class might discuss how the role playing of each actor was effective and how it was ineffective, and how the given sociodrama could be used in a beginning class of sociology students. Time was also given the actors to report on their reactions to their role playing.

Of the sociodramas that were developed in this graduate class in Problems of Teaching Sociology, for use in beginning classes, only two will be introduced here, one dealing with social stratification and the other with social conflict.

1. *Social stratification.* In the first sociodrama that was presented as illustrating a type for use in a beginning sociology class of lower division students, the theme was social stratification. Type roles were played by five participants. Dottie urged the admission to their club of a girl who had come to school very plainly but neatly dressed, with no make-up, but having pleasant and agreeable ways. Dottie favored the admission of Rose because she was "likeable" and because her economic circumstances were not her fault and should "not be counted against her." Dottie believed that the possession of money should not be a test for admission to their "democratic club of middle-class girls."

Pat openly opposed the admission of Rose on the ground that "if we start this, there will be no end to it." She thought that Rose, if admitted, would want to bring in "a lot of her friends." She had seen Rose walking to classes with "a chum" who someone had said was "positively uncouth."

Ann favored Rose's admission because "we can make her over into one of us, and then she won't want to bring in any of her friends." Ann also favored Rose because of "the good we can do her," and added, "our club doesn't exist just for us who are already in it."

Jane said "yes" and "no." She favored the admission of Rose because of what Dottie had said about Rose being "a fine, deserving girl in her own right" and despite "her parents' economic condition." On the other hand

[11] Helen H. Jennings, "Sociodrama Teaches Democratic Living," *Journal of Home Economics,* 44:261.

[12] C. C. Bowman, *ibid.,* p. 197.

she opposed a favorable vote because Rose "really can't afford to belong to our club. She hasn't any money, her father is ill, and her mother is working out." Pat at once reiterated her positive disapproval, for "the whole club would be disgraced."

Dottie stood by her guns and said that the admission of Rose would be "the one encouraging spot in Rose's life." Dottie had an uncle whom she knew would be willing "to cover Rose's initiation and membership fees and assessments." Pat rejoined, "we don't want a charity case, no matter how nice a girl may be. If Rose has any sense of honor she wouldn't accept such a gift." Ann replied that "we all accept gifts from our parents all the time, and some of us even from uncles to keep us going. Even Pat is here on a scholarship gift, but that doesn't make her a charity case!"

After further role playing the instructor asked the other members of the class to comment on the way the different roles were played, the strong and the weak aspects of the role playing. Each of the actors was asked to give his reactions to his own role playing. Then, both the actors and the other class members discussed how they thought such a sociodrama would work out in a beginning class in sociology. The consensus was, first, that it should be given a thorough trial, and second that it would produce excellent results in giving a beginning class a new feeling type of understanding of the abstract concept of social stratification. It was also thought that success would depend on the skill of the instructor in introducing such a sociodrama, and on how well the actors entered into their respective parts. The "atmosphere" within which the sociodrama was carried out was also viewed as being important.

2. *Ethnic relations.* Another of the experimental sociodramas dealt with ethnic relations in a public housing project. Jack favored the admission to the housing project of minority races and ethnic groups, such as Negroes and Mexicans, on the same basis "as anybody else." He felt that "discrimination is unAmerican. Moreover, race is only skin deep, in fact, only pigmentation deep, so let's forget it."

Bill favored the admission of minority group members on the same basis as others, but thought that they all ought to live "with their own kind" in a given part of the housing project. Then, after we get a little acquainted with some of them, we might let "a few of them move into our section if everybody is willing." Jack replied that this plan would be insulting, for it would "set them apart." They would "be on trial." Anyway, there would "never come a time when everybody would be willing to have some of them move in with us."

Hank said that "this is America and we must observe American principles." He favored a quota plan for admission as being American, by which he meant that "we could let in a certain per cent of minority persons, say 10 per cent or 15 per cent." He argued that since Negroes comprise about 10 per cent of the population of the United States, "we could admit them up to 10 per cent of the white population." Jack said that he didn't like Hank's phrase "we could let in" minority people, and added that this is a free country and the minority citizens have "as much right as anyone to decide who shall be 'let in', if you are going to put it that way."

George objected to admitting any "Negroes or Mexicans." They "are not like us, and never will be, and just think, their children will grow up with our children, and marry our children, it's unthinkable!" Jack replied that "white girls now discriminate among their white boy friends. No white girl will marry any Tom, Dick, or Harry among white boys."

Dick pointed out that the Negroes and Mexicans in their town were living in deplorable conditions and paying high rent, that their children had a high sickness rate, all because they are forced to live under unhuman conditions. George promptly asserted that "their bad conditions are all their own fault."

Walt said he favored the "gradualism" plan of admitting one or two "carefully selected, light-colored, high-class Negro families," and then when we found out that they are like us, we could admit more, just a few at a time, even some darker-colored persons." "Ridiculous!" shouted George in an emotionally relaxed attitude. His guffaw, despite its negative expression, relaxed the tension.

Again, the class discussed the ways the different roles were played and asked each actor to tell how he felt about the role he had played. The suitability of this type of sociodrama was discussed in relation to the kinds of communities represented by the members of a class of beginning sociology students.

The foregoing sociodramas are elementary, for they are samples of what may be carried out by freshmen and sophomores. They are merely indicative of what may be done. Only the initial portions of each sociodrama and of the discussions that followed are given here.

In the discussions that followed the presentations, some of the weak points came to the surface first. (1) Not all persons can put themselves into the parts they are expected to express equally well. Certain roles will be carried our poorly and sound attitudes will be discredited. (2) A beginning class in sociology will have members who will prefer to have the in-

structor use the time in lecturing. (3) The presentations may lack in factual bases and become a debate of opinions. (4) Vehement expressions may be used and angry feelings sidetrack attention from real issues. (5) The open-minded atmosphere of a classroom is not like life situations.

The strong points that one or more persons observed were: (1) the participants get "the feel" of a social situation much better by role playing than by reading, reciting, and listening to a lecture, "no matter how good." (2) The sociodrama has both an educational function and a therapy function. An instructor with a psychodrama interest could ask each actor to play a role opposite in nature to that which he daily plays in life, and have him report on the feelings that he experienced as a result, and so on.[13] (3) Some of the participants in the sociodramas experienced an "emotional awareness" not previously known to them, and a new insight into the nature of feelings, how they arise, why they are restricting, and under what conditions "emotional freedom" develops; in short, they experienced the thrill of "action learning."[14] (4) The playing of roles outside one's daily repertoire helps to round out one's intellectual experience, and reveals the feelings as an integral part of understanding a social conflict.[15] (5) Playing an unusual role gives one a new slant on his regular role, he learns to get outside himself, and he may be able to see himself as he really is. Thus, he tends to enlarge and enrich his insight into the meanings of personality and life.

[13] See Gertrude Wood, *ibid.*, p. 647.
[14] Helen H. Jennings, *ibid.*, p. 261.
[15] *Ibid.*, p. 262.

2. SOCIOMETRY IN INDUSTRY

THE USE OF SOCIOMETRIC DATA IN INDUSTRIAL COUNSELING

B. J. SPEROFF

Counseling, as a cathartic technique, is beginning to enjoy ever widening utility as a valid and necessary adjunct in industrial relations work. Sociometric techniques, albeit still not too generally used in industry, are emerging as still another potent tool in assessing and determining the nature and significance of interpersonal relationships on the job. Essentially, sociometric devices have been applied in industry to measure morale and its concomitant by-products. And, morale can best be appraised by studying groups and subgroup formations. Sociometry aims at making such an appraisal by accurately and objectively determining the like-nominations or choices of an individual from among his peers. The technique developed by Moreno (2) and the modification made by Jenkins (1) are most useful in understanding group structure in terms of its cohesiveness (or the lack of it).

The procedure involved in ascertaining the nature and extent of the sociometric status of the group is relatively simple. Each individual in a group is asked (either orally or in writing) to name the individual(s)—usually a specified number—in the group whom he considers the "best worker," "most efficient," or the like. The one with the greatest number of choices is designated as a "star" (albeit there may be more than one star in a group). An individual who is never chosen is designated as an "isolate." "Mutual admiration societies" are said to exist when two individuals chose one another. A "triangle" exists when A chooses B, B chooses C, who, in turn, chooses A, and, technically, such an arrangement represents the beginning of a clique or subgroup formation.

A constellation or configuration of choices when graphically charted is referred to as a sociogram. From such a schema one can readily determine: (1) the number and size of cliques or subgroups within the group; and, who the stars, isolates, etc., in the group are; (2) the general level of group morale or cohesiveness (by the presence of clique formations); (3) the accuracy of one's personal observations as contrasted to the empirical, objective evidence; (4) those who may be in need of counseling, guidance, testing, and therapy; (5) who the potential leaders of the group

are; (6) whether restructuring, regrouping or rearranging individuals or groups of individuals is feasible or necessary; and (7) whether inferential information correlates with the facts as to basic characteristics, qualities, attitudes, etc., held between certain individuals within the group.

The aim of this paper is to: (1) describe how sociometric data can be utilized as a basis for providing supportive evidence during a counseling interview, and (2) briefly outline how such a counseling interview was conducted.

Case Background

The section head of a highly specialized industrial relations group became disturbed and anxious over the problems being created by one member of that group. The high degree of group unity, cooperativeness, and team spirit slowly started to disintegrate, and not only were personal problems and complaints on the increase but interpersonal friction, discord, and rebelliousness were threatening to destroy the creative and developmental work of the group on joint undertakings. This state of tension and anxiety was apparent to all the members of the group as well as to the section head. For some inexplicable reason no member of the group (nor the section head) approached, or even broached, the nature of the problem with the individual concerned. Perhaps the most cogent reason for this lack of decisive action, either by a member of the group or the section head, could be attributed to the fact that all of them were aware, from bitter past experience, of the extreme sensitivity and susceptibility of the problem-individual to anything smacking of personal effrontery on their parts.

Such a mercurial and explosive situation was tolerated for some two months, during which time the group's activity degenerated to a bantering and bickering round-robin type of non-productive effort. After considerable reflection the section head finally decided to have a "heart-to-heart" talk with the problem-individual. However, even in considering the undertaking of such a course of action, he soon realized how woefully equipped he was with facts, data, and other relevant information which would materially aid him in understanding the individual and intelligently preparing to cope with him. The problem-individual was an unusually intelligent, meticulous, and efficient worker. He was verbally adroit, skilled in negativistic argumentation; self-confident and reassuring in his manner—even to the point of being somewhat arrogant and authoritative. Over a period of years the group had resorted to always checking with this individual, or asking for his opinions etc., before putting the stamp of approval on any part of the

group effort. The group, nonetheless, saw fit at times to become caustic, argumentative, and refractory with one another, but they assiduously avoided any such contingency with the problem-individual (like an anathema is to be avoided at any cost). In essence, this individual was a clever, highly defensive, resistant, overly-sensitive individual who chose to hide himself behind a puerile facade of defense mechanisms—withdrawal, sublimation, and compensatory behavior.

The Sociometric Survey

In consultation with the author the section head agreed to use a sociometric questionnaire in order to determine and assess the group's interpersonal feelings and reactions. The questionnaire itself consisted of nine questions asking the respondent to name the individual who most accurately, as well as least accurately, answered the descriptive statement. The final question asked the respondent to write a brief description of himself as his "best friend" and as his "worst enemy" would depict him. The questionnaire was administered and the sealed responses were forwarded individually to the author. The data was analyzed and sociograms were drawn up charting each individual's positive and negative responses to each of the questions. The section head and the author then went over the sociometric data—question by question, and sociogram by sociogram. Not only did the section head in this way gain a better and more accurate understanding of his section's feelings and reactions towards one another, but it also proved a valuable tool insofar as it gave a personal estimation of the qualities, characteristics, and traits associated with each individual. Much of these findings merely served to corroborate the section head's fund of knowledge, albeit in addition it gave meaningful significance to those points of information which he could not have verified previously. As a final resultant, the section head was able to determine the level of morale of his section.

The findings of the sociometric survey clearly indicated the problem-individual was superior in many positive characteristics, (e.g., most persuasive, confident, dynamic), which was self-evident to the section head as well as to the rest of the group; and, it also pointed out and substantiated both the section head's impression and the group's reaction to his negative characteristics (e.g., least liked to work with, flexible, logical). With definitive and impersonal evidence to support his position the section head was not in the vulnerable situation of making statements which he could not support or defend. Nonetheless, this delicate task required chary handling.

The section head and the author next outlined a plan of action for the counseling interview; however, the section head expressed a desire for the author to undertake and execute this assignment. The feasibility and other pragmatic considerations connected with accepting this undertaking were enumerated and discussed, and in the end it was decided the author should arrange for and conduct the counseling interview.

The Counseling Interview

Within the confines of a small, private office the author informed the problem-individual of the purpose of the interview: to review the results of the sociometric questionnaire as they pertained to the individual; (that all data and information relevant to the discussion was available for his appraisal). Insofar as the author was aware of the events leading to the reason for his being involved in this undertaking nothing was mentioned. Initially, the author generally described sociometric techniques and how they can be of particular service in measuring interpersonal relations. A specially prepared specimen of the questionnaire, together with the sociograms, was presented and explained pointing out the individual's strengths first and easing into his weaknesses. It was carefully and repeatedly stated that these results were the observations of his fellow associates as they viewed their relationship with one another.

After discussing and evaluating each of these characteristics the individual was asked to read his own self-description summary (as his best friend and worst enemy would describe him). It was deliberately and specifically pointed out to him that in practically every trait or characteristic described he had shown remarkable insight and understanding of himself, and that, furthermore, these summaries correlated significantly with the sociometric findings. From this point on the non-directive counseling approach was employed. During the balance of the time the individual began to unfold and unravel some of his personal and interpersonal problems which contributed to the strained relations within his group. Hostility was both inferred and expressed towards every member of the group, including the section head who seemed to be the crux of his troubles, and a superficial analysis of some of these feelings with respect to particular individuals was undertaken. Whenever possible, during the course of the catharsis, the author attempted to correlate the sociometric evidence (whether or not the individual made corroborative or supportive statements) to statements elicited during the course of the counseling period. Towards the end of the interview the individual expressed interest and a willingness in overcoming

his deficiencies and thereby improving his relationships with the other group members (whom, incidentally, he felt he understood much better).

Follow-up Results

Approximately three months later the identical sociometric questionnaire was employed on the group, and the resulting analysis revealed a marked improvement in the general sociometric status of the group towards the problem-individual. On two of his worst characteristics he was now tied with another group member (and was not named as often!), and in a third characteristic his name was supplanted by another group member. Some two months later, while interviewing the section on another matter, each individual was asked how things were progressing in the section, and without exception each indicated what a striking change had taken place in his relations with the problem-individual since the sociometric survey took place. (It might be stated here that the group was completely unaware that a counseling interview with the problem-individual had taken place.)

The foregoing example merely serves to indicate how counseling interviews can prove to be more productive, objective, and revealing if a substantial basis for such an interpersonal exchange can be found. It appears that the use of sociometric data not only provides such a basis, but, in addition, supplies tangible and irrefutable evidence of the perceived relative strengths and weaknesses of each peer rater as he appraises and reacts to other members of his work group.

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INTERACTIONS AMONG SUPERIORS AND SUBORDINATES*

Ralph M. Stogdill

Moreno, Jennings and Sargent (1) have shown that the amount of time that people prefer to spend with other persons can be used as an index of sociometric choice. The study described in this paper is based, not upon

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people's preference for spending time with others, but upon the time that they report having spent with other persons in a working situation. Such reports of working time can be used for the construction of sociograms to show who works with whom.

In a previous paper (2) in this journal, it was shown that a sociogram can be superimposed on an organization chart to show the structure of working relationships in a formally organized group. In a later paper (3) it was demonstrated that a number of indices could be derived from the mentions given scores and from the mentions received scores to indicate the tendency to work with superiors, peers or subordinates, or with persons inside or outside one's own unit of organization. Data on the reliability and validity of these indices will be presented in a forthcoming monograph (4).

Sociometric Indices

The indices are listed and defined in Table 1. In Table 2 is shown the correlation between the sociometric scores of 22 seniors (superiors) and the

TABLE 1
Sociometric Indices (Definitions)

MG	Mentions given—Total number of persons mentioned
GI	Mentions given *inside* own unit of organization
GO	Mentions given *outside* own unit of organization
GA	Mentions given to persons in echelons *above* one's own
GS	Mentions given to persons in the *same* echelon as one's own
GB	Mentions given to persons in echelons *below* one's own
MR	Mentions received—Total number of mentions received
RI	Mentions received *inside* one's own unit of organization
RO	Mentions received from persons in units *other* than one's own
RA	Mentions received from persons in echelons *above* own
RS	Mentions received from persons in *same* echelon
RB	Mentions received from persons *below* own echelon

average scores of the groups of juniors (subordinates) whom they supervise. Only superiors who supervised 3 or more subordinates were included. The subjects occupy administrative positions in a large naval research organization.

It may be seen in Table 2 that the number of persons mentioned (MG) as work partners by seniors is significantly correlated ($r = .42$) with the number of mentions given by subordinates to their subordinates (GB) and with the number received from inside own unit (RI) and from superiors (RA). The latter correlations are .55 and .48 respectively.

When superiors mention more persons inside their own units (GI), their subordinates tend to mention persons both inside (GI) and outside (GO) and to be mentioned by persons both inside (RI) and outside (RO) their own units. The correlation coefficients are .45, .42, .48 and .52 respectively.

TABLE 2

CORRELATION OF SUPERIORS' SCORES WITH THE AVERAGE SCORES OF THEIR SUBORDINATES (N = 22 Seniors)

Scores of Superiors	Average Scores of Subordinates											
	MG	GI	GO	GA	GS	GB	MR	RI	RO	RA	RS	RB
MG	00	33	—15	28	19	42	36	55	—41	48	00	22
GI	01	45	42	35	04	—01	30	48	52	39	18	—12
GO	—21	—30	24	—40	—24	10	—18	—11	05	—03	—37	30
GA	—16	03	—14	19	—27	—38	—46	—08	—40	—18	—47	00
GS	07	24	—26	06	03	—06	—23	04	—27	—16	—12	—12
GB	—05	07	—03	—08	—19	30	53	44	—14	59	19	16
MR	22	29	02	—07	00	32	15	31	—28	—09	14	28
RI	27	53	—33	18	08	04	—02	44	—57	—23	—07	—06
RO	—08	—31	51	—38	—16	36	19	—09	19	08	10	30
RA	22	32	—33	18	13	—44	—17	—02	—25	—20	00	—11
RS	19	01	32	24	—07	—11	—02	—03	16	—13	—37	—15
RB	24	26	07	—16	—03	51	23	29	13	03	24	24

Decimal points are omitted.
r = .42 is significant at the .05 level.
r = .54 is significant at the .01 level.

When superiors mention persons outside (GO) their own units, however, a different pattern of responses is noted in subordinates. Most of the scores of the latter are negatively correlated with the scores of seniors. This is especially true of GA and RS. There is a slight positive trend for subordinates to mention and be mentioned by subordinates (GB and RB) and to mention outsiders (GO) when superiors work with persons outside their units. The tendency for superiors to work with outside persons would appear to have a somewhat dispersive effect on the interactions of juniors. Juniors, under these circumstances, do not tend to work with their superiors or peers, or with other persons in their own units of organization except subordinates.

When seniors mention their superiors (GA) as work partners, their juniors tend to receive fewer total mentions (MR) and fewer mentions from peers (RS). They also tend to give fewer mentions to their subordinates (GB) and to receive fewer mentions from outside persons (RO). The ten-

dency for seniors to work with their superiors also appears to have a somewhat disruptive effect on the interactions among their subordinates.

The GS scores of superiors are not highly related to any of the scores of subordinates. However, the tendency of superiors to work with their subordinates (GB) is significantly related to the MR, RI and RA scores of juniors. Juniors receive more total mentions, more mentions from persons inside their own units and, as would be expected, from their superiors. Juniors also tend to mention their own subordinates as work partners, as is indicated by a correlation of .30.

The MR scores of superiors are not significantly related to any of the scores of their subordinates, but most of the correlations are positive. The RI scores of superiors are positively related to the GI and RI scores of juniors and negatively related to the GO and RO scores of juniors. For superiors to receive more total mentions and more mentions from inside their own units, appears to be associated with a closing of interactions among subordinates.

The RO scores of superiors are positively correlated with the GO scores of their subordinates. There is also a tendency when superiors receive more mentions from outside their own units, for their subordinates to mention superiors less frequently and to mention subordinates more frequently. In other words, when superiors receive more mentions from persons outside their own units they tend to be given fewer mentions by the subordinates in their own units (GI and GA).

The RA scores of seniors are negatively related to the GB scores of juniors. When seniors receive more mentions from their superiors, subordinates tend to give fewer mentions to subordinates. The RS scores of seniors are not highly related to any of the scores of juniors. However, the RB scores of seniors are significantly correlated with the GB scores of subordinates. In other words, when seniors receive more mentions from subordinates, then juniors tend to give more mentions to their own subordinates.

Discussion

The results of this analysis have revealed a number of reciprocal or supportive relationships. For example, the tendency for juniors (or seniors) to give mentions to persons inside their own units is significantly related to the tendency for seniors (or juniors) to receive mentions from persons inside their own units. It is also found that when seniors give more mentions to juniors, then juniors receive more mentions from seniors. These rela-

tionships can be attributed in part to the method of computing the sociometric scores.

It is apparent, however, that not all the results can be explained on the basis of reciprocal effects or the method of computing the scores. For example, there is found a zero correlation between the RO scores of juniors and the GO scores of seniors. There is a low negative correlation between the RB scores of seniors and the GA scores of juniors. Positive correlations would be expected.

Many of the results suggest a chain effect. All of the diagonal values, except four, are positive. Two of the exceptions (the correlations between the RH scores of juniors and seniors and between the RS scores of juniors and seniors) are negative. Two others (the MG scores of juniors and seniors and the GS scores of juniors and seniors) are zero. Only one of the values (the correlations between the GI scores of juniors and seniors) is statistically significant. The results suggest a slight tendency for juniors to exhibit the same pattern of interactions that their seniors do.

Some patterns of interactions in superiors appear to exert a closing effect upon the interaction of juniors. When superiors mention juniors more frequently as work partners, then subordinates tend to mention their juniors more frequently and they receive more mentions from persons in all categories, except from those outside their own units of organization.

Other interaction patterns in seniors appear to have a somewhat dispersive effect upon interactions among juniors. When superiors mention, or are mentioned by, outsiders as work partners then their subordinates tend to mention fewer persons inside their own units and they also receive fewer mentions from persons inside their own units. When seniors mention, or are mentioned by, their own superiors there is a tendency for juniors to mention their subordinates less frequently and to be mentioned by them less frequently. The tendency for superiors to maintain working relationships with members outside their own units is associated with a tendency among their subordinates and among members within their own units to avoid giving mentions to superiors.

The results reported here suggest that interactions in an operating organization are very complex in structure. Some of the effects are not readily perceived by direct observations. It seems certain that interactions are affected by many factors besides interactions. For example, the nature of the organizational tasks being performed, and the formal structure of the organization, are likely to exert effects upon interaction structures.

The results have been discussed in terms of the effects of superiors

upon subordinates. It is possible, and highly probable, that the interaction structures established among subordinates also condition the interaction patterns of their superiors.

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3. SOCIOMETRY IN COMMUNITY ORGANIZATION

A CASE OF FAILURE IN THE ACHIEVEMENT OF GOALS

CHARLES AND ZONA LOOMIS

I. THE PROBLEM

The application of social science to the attainment of a specified group goal and its failure of achievement constitutes the problem to be analyzed. The manner in which sociometry helped to reveal the causes of failure, as well as its use in a sociometric election—the only successful endeavor of the group—will be described in brief. We recognize that our interpretations are biased by our idiosyncratic experiences, training and personalities; critical reactions to our analysis, particularly from those who participated in the activity being analyzed, will therefore be especially useful.

The group being analyzed was one of the six "Action Groups" or "A Groups" initiated during the 1950 summer session of the National Training Laboratory for Group Development at Bethel, Maine. Many of the conditions contributing to failure of the action groups during that first trial have been rectified. This and other similar analyses, however, may help to prevent other groups from making the same mistakes. The application of Sociometry as applied in this article and as applied in the National Training Laboratory for Group Development generally will give concrete evidence of the very great contribution of Sociometry and the work of J. L. Moreno, founder of Sociometry, to the field of Group Dynamics.[1]

The senior author, who was the leader of A Group IV and the junior author, who was a delegate representing the Enoch Pratt Free Library of Baltimore, had participated in a good many workshops and activities which they believed would be similar to the session under discussion and anticipated no unusual difficulties, a view shared by most other leaders and delegates

[1] For a discussion of the development of Sociometry see J. L. Moreno, *Who Shall Survive? Foundations of Sociometry, Group Psychotherapy and Sociodrama,* New York: Beacon House, Inc., 1953, pp. 3-31. Group Dynamics was founded by Kurt Lewin, a refugee social psychologist from Hitler's Germany. See Kurt Lewin, *Resolving Social Conflicts,* New York: Harper and Brothers, 1948 and "Frontiers in Group Dynamics I and II," *Human Relations,* Vol. I, No. 1, 1947, pp. 2-38, 153-193. Several leaders in Group Dynamics have been influenced by the sociologist Karl Mannheim also from Hitler's Germany. See his *Ideology and Utopia—An Introduction to the Sociology of Knowledge,* New York: Harcourt, Brace and Co., 1940.

although all knew that the attempt of the "A Groups" that summer was supposed to be something new. The "A Groups" consummated the determination of the National Laboratory to give social science a more important place in the Laboratory. Past effort had been focused on "Training" or "T Group" activity which had for its purpose "Sensitivity training and training of self-perception and self-analysis,"[2] obviously phenomena with a distinctly psychological slant. In contrast the A Group leaders in line with Laboratory policy formulated their general objective as follows: "To train delegates in social action based upon scientific assessment and controlled by democratic values and procedures,"[3] obviously involving phenomena with strong sociological implication. As might be expected, the initial trial of a new way of assessing group behavior was still outweighed, that first summer, by the psychological approach which was well entrenched from former years of Laboratory experience. Sociological considerations and concepts were in a way residual, T Groups remained the center of focus, T Group leaders, for the most part "old-hands" at National Laboratory sessions, maintained higher social rank in the Laboratory than other leaders.

The central problem of the A Group leaders to be described in this article was that of bringing to the Laboratory training experience in what was called human relations skills in organizational activity. All of the A Group leaders had been chosen because of experiences which seemed to fit them for this task; none foresaw difficulties; yet almost none—certainly least of all the senior author of this article—achieved in any appreciable degree the goal set for A Group leaders. An explanation of why this failure resulted is the purpose of this article. The explanation should also account for such events and conditions as the following which accompanied the failure: All but one of the six A Group leaders were discharged as leaders by their groups; a considerable number of delegates manifested various symptoms of stress, some so serious as to require medical and psychiatric care; the group described became torn by a rift which as measured by sociometric indices establishes somewhat of a record.

There were 164 members of the Laboratory in 1950 of which 50 were staff members. In general, delegates or students were chosen because officials of the Laboratory believed they would be influential in improving human

[2] *Explorations in Human Relations Training—An Assessment of Experience, 1947-53,* National Training Laboratory in Group Development, National Education Association, Washington, D. C. and Research Center for Group Dynamics, University of Michigan.

[3] Instructional sheet for A leaders, developed by them and issued by the Laboratory.

relations. High ranking officials of industrial firms, government bureaus, educational institutions, sections of the armed forces, labor organizations, churches and other important social systems in which the improvement of social relations was deemed important were included. The A Group IV of which the senior author was leader consisted of 23 members. The other five A Groups which met for two and a half hours for five days a week for three weeks were of comparable size.

II. Relevant Factors

As will be shown later under the heading, Analysis, perhaps the greatest factor in the failure of the A Group under consideration to achieve its objectives was the social and cultural atmosphere of the Laboratory itself. As the officials of the Laboratory frequently state, it was a cultural island.[4] A most important element was a tacit but pervasive subscription to egalitarianism.[5] "We are all here to learn; no one man has more to offer than others; we are all equally capable of leadership, contribution, cooperation," was a widely-held tenet in this cultural island. Appropriate to this philosophy, everyone was known to others only by his first name. His last name, where he came from, the organization he represented, and the kind of work he did, while not a closely guarded secret, simply became extraneous, peripheral data. The individual's status-roles which were his on the outside simply did not exist here. And, island-like, all significant social interaction took place only among the "dwellers." The two daily group periods of two and one half hours each afforded interaction among individuals who also ate together, played together and slept in the same dormitories. The result was an over-powering involvement in the T and A Groups. With no outside interaction, and with the individual's divestment of his identity in his outside life, the work of the groups became all-absorbing. Many who planned to make the period a quiet restful vacation became so engulfed and absorbed

[4] "On this cultural island, separated from the mainland of conflicting and precariously balanced forces, as many forces of the training culture as possible can be so planned as to encourage change. Here the individual will feel out of step if he doesn't change." *Explorations in Human Relations Training—An Assessment of Experience*, 1947-1953, op. cit., p. 15.

[5] William Foote Whyte describes this as follows: "It seems to me that some of the people seeking to apply Group Dynamics have set themselves explicitly or implicitly the ideal of a group in which leadership roles are rotated, and no single individual stands out." "Leadership and Group Participation," Ithaca, N. Y., New York State School of Industrial Relations, Cornell University, Bulletin No. 24, May 1953, p. 4.

in the group activity that they took less than the normal time for sleep and relaxation.

The anomaly of the "leader" in such an egalitarian society is apparent as indeed it had been in the Laboratory sessions preceding the one under discussion. The past pattern was important in setting up certain expectations among the delegates. In previous years the T Groups had frequently managed so that their leaders became practically indistinguishable from other members of the groups. T Group leaders who tended to be dominant were divested of their authority by their group, permissive leaders were absorbed into the groups so that their status-roles were comparable to those of the delegates. This pattern was well known by delegates and frequently discussed, as one of the most important and distinguishing characteristics of the Laboratory. Early in his experience as leader of A Group IV the several group members demanded by what authority the senior author was directing the role playing scenes designed by the officials of the Laboratory. If he remarked that he had been employed as a leader, some delegates thought that either he was misinformed concerning his role, or the Laboratory was inconsistent. In other words the expectation concerning status-roles in the laboratory prohibited the delegation of authority such as that which the Laboratory officials were attempting to delegate to the A Group leaders. The egalitarian and permissive atmosphere of the Laboratory was not thought to be compatible with the official definition of the teacher-trainer status-role as normally conceived.

One last factor important to the case is the make-up of the A Groups. Since they were designed to be "action groups," the design for selection of the delegates and their placement in the A Groups was done on a team basis. Thus, two or more individuals, all representing the same organization "at home" might constitute a team in the A Groups, so that they could continue to interact, to resist pressures in the "back home" situation which might tend to nullify their group experiences and to actually put into action at home the skills they would be introduced to at the Laboratory. Many delegates, however, came singly from their respective institutions. Thus, the delegates or student body was made up of many individuals who knew no one else, some who knew one or two or three other persons, and some with larger groups of acquaintances. The anonymity of everyone in relation to what work he was engaged in as well as the great number of total strangers with whom all were associating served to conceal the team identity. Indeed, there were many teams which were never recognized as such by the other members of their A Groups throughout the whole three weeks of group meetings.

III. Sequence of Events

The Planning Week.—During the week before the delegates arrived, the six A Group leaders developed their objectives and training plans. A whole series of situations suitable for role playing were designed. As it turned out, much of this arduous and careful work was useless because of the groups' preoccupation with inter-personal relations and with their own and the leaders' roles.

The First Day.—The first formal afternoon meeting of A Group IV was rather uneventful. All sat around a huge round table with large cards before them on which their first names appeared. Twenty minutes was taken for the administration of a Group Thematic Apperception Test. Twenty minutes was allowed for discussion of this. Thirty-five minutes was given to role playing, ten additional minutes for feedback participated in by a recorder who noted what went on, and twenty minutes for discussion. On the Post Meeting Reaction slips, three said the meeting was excellent, thirteen that it was good, four that it was all right, one that it was mediocre and one checked the category "no good." Nine indicated that they wanted more role playing.

Sneak-Day Counsellor Scene. The Second Day, June 27, 1950.—In preparation for this second session the A Group leaders under Lee Bradford developed a scene described below in Appendix A to be role-played. During the preparation all leaders agreed that their members seemed over-aggressive and anxious to build status for themselves in the groups. No social scientist could fail to observe that many of these delegates chosen because of their high rate of interaction and leadership qualities, when deprived of their outside status, became excessively concerned about their status relations with others. Most of this was unconscious, but aggressiveness often of a vicious sort resulted. For this reason it was decided by the A Group leaders not to call for volunteers to play the various roles in the "sneak day-counsellor" scene as presented below. Role players were to be chosen by lot. We shall not reveal names, but by lot, number 18 on Figures 1, 2, 3, 4, and 5 was chosen to play counsellor. The person thus chosen was in his back home capacity one of the vice-presidents and an extremely successful personnel manager of a very large and prosperous industrial concern. Also by lot, numbers 8 and 9 of Figures 1, 2, 3, 4, and 5 were chosen to play the part of students. Both 8 and 9 were members of a mental health team, although it was not yet apparent to the group that an organized team operated here. Numbers 8 and 9 on these same Figures at home were a psychiatrist and psychologist, respectively, and working for the same organization.

Without relating the details of the socio-drama as it was enacted, it is important to relate that the kind of situation created by the "dramatics" of 8 and 9, and the personal nature of their attack upon the "counsellor" was so stressful to the latter that he was under psychiatric care for a considerable

NUMBER OF PERSON CHOSEN

Number of Chooser	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
1																								
2							3		**1**		**4**			5					2					
3		4						2	1		3											5		
4		4			2						3				**1**				**5**					
5									2		**4**	5						**1**	**3**					
6					3		**4**					1								2	5			
7						**4**			5		1	2											3	
8		3							**2**			**5**												
9		**3**						**2**			**5**	**4**					1							
10					2						3	5	**4**										1	
11		**3**			**4**				**2**			1					5							
12		4	3					**2**	**1**		**5**													
13				3						**5**	4	2					**1**							
14						3							5				**2**					**1**	**4**	
15		2		**3**	4	5																1		
16							4	1	2		3												5	
17				1									**2**	**5**					**4**				3	
18	5				**2**	3			4										1					
19				**2**	**4**												**1**	**3**				5		
20		1	5													4	3					2		
21																								
22							5							1					4		2		**3**	
23												4		**2**			3		5			**1**		
Total																								

FIGURE 1. Matrix of Action Group IV Showing Leisure Time Choices June 28, 1950, National Laboratory for Group Development, Bethel, Maine. Mutual choices in bold face.

portion of the remainder of the Laboratory session. A perusal of the briefing instructions for the enactment of the socio-drama, given in Appendix A, will reveal that under any circumstances the "counsellor" had the stressful or "box" position. The vigor of the "students' " attack on the "counsellor" in this particular enactment was sufficient to cause uneasiness in the group and to throw into prominence the "students"—a prominence for which it

must be remembered everyone was consciously or unconsciously vying in this status-bereft "culture."

Table-Moving, Floor-Sitting Act.—As we came into our assigned meeting place on the third afternoon, we found a complete change in all facilities.

NUMBER OF PERSON CHOSEN

Number of Chooser	12	11	9	8	19	3	2	20	16	1	7	13	17	10	21	22	23	15	18	6	5	4	14	To-tal
12		5	1	2																				
11	1		2				3														4			
9	4	5		2			3																	
8	5		2																					
19													1						3		4	2		
3																								
2		4	1																					
20																								
16																								
1																								
7																				4				
13													1	5										
17					4							2											5	
10												4												
21																								
22																	3						1	
23																1							2	
15																						3		
18					1																2			
6											4													
5		4			3														1					
4					5													1						
14													2			1	4							
Total																								

FIGURE 2. Matrix showing leisure time choices June 28, 1950 for A Group IV. Only mutual choices shown—columns and rows arranged to indicate the clique structure of the group.

All chairs were removed and the round table was set on edge with its large top against one of the walls of the room. Such a change must have required considerable group effort. Since all the name cards (first name only) were placed in a circle on the floor, the senior author, as leader of the A Group merely took his seat behind his name as though nothing had happened. He told the group he had had nothing to do with the change, but supposed it

met with group approval. Many demanded to know who had done it but no explanation was forthcoming from any of the group.

The pertinent event of the third day was the indication by A Group IV members of the following: Which members of the group they 1) would

NUMBER OF PERSON CHOSEN

Number of Chooser	12	11	9	8	19	3	2	20	16	1	7	13	17	10	21	22	23	15	18	6	5	4	14	To-tal
12		2	3		1	5																		
11	3		1	2																				
9	2	1		5																				
8		1	4																					
19	4																							
3	3						2																	
2						3		1																
20							2		3															
16								4																
1																								
7																								
13																								
17																								
10																	1							
21																3								
22															2			3						
23														2			3	3				4		
15																1	3							5
18																					4	3		5
6																					2	3		4
5																			4	3		2		1
4																	2		5	1	4			3
14																		2	5	3	4	1		
Total																								

FIGURE 3. Matrix showing the mutual leisure time choices of members of Action Group IV, National Laboratory for Group Development, Bethel, Maine, July 4, 1950. Note the formation of the non-mental health team in the lower right hand part of the matrix.

like to participate with in recreational activities, 2) thought were most productive in the group, 3) thought were most like them in their philosophy concerning change and 4) would like to participate with in small group work activities. The results of the first of this series of sociometric choices was cast in the sociometrices which are duplicated here under Figure 1 and Figure

2. It was immediately evident to the leader, who tabulated the results and cast the sociometrices as soon as he could after the questionnaires were in, that the mental health team was not only a team, but a clique whose number included a regional team which until this time had not been as-

NUMBER OF PERSON CHOSEN

Number of Chooser	12	11	9	8	19	3	2	20	16	1	7	13	17	10	21	22	23	15	18	6	5	4	14	To-tal
12		**2**	**3**	4	**1**	**5**																		
11	**3**		1	**2**						4			5											
9	**2**	**1**		**5**			3									4								
8		**1**	**4**		5	3										2								
19	**4**							3					2		1						5			
3	**3**		1		4		**2**									5								
2	4	5				**3**		**1**												2				
20						4	**2**		**3**			5				1								
16		3	1	2			5	**4**																
1																								
7		3													2		1	4		5				
13		4								3			1							5		2		
17																								
10												3					1			5	4		2	
21					4				5		2					3							1	
22													4		2			3				5	1	
23														2		1		3				4		
15													2			1	3					4	5	
18					1								2								4	3	5	
6																		5	1		2	3	4	
5																5		5	4	3		2	1	
4																	2		5	1	4		3	
14																		2	5	3	4	1		
Total																								

FIGURE 4. Matrix showing all leisure time choices July 4, 1950 for A Group IV, National Laboratory for Group Development, Bethel, Maine. Mutual choices are in bold face.

sociated in the mind of the leader, with the mental health team. As far as the leader knew, no other A Group members were aware of the powerful subgroup constituting one-third of its ranks.

The Power Struggle Emerges.—Such oblivion was not to last long however. On about the fourth night, June 29, number 4 on Figures 1, 2, 3, 4, and 5 came to the authors' room to tell us that Number 7 had overheard

Number 8, a member of the mental health team, saying something like the following: "We've brought a team of experts on psycho-drama. If we can get the Laboratory to adopt it, perhaps the Health Service will wake up and change its mind about it. We intend to get rid of the leader, take over

	Number of Person Chosen																						
Number of Chooser	12	11	9	8	19	3	2	20	16	1	7	13	17	10	21	22	23	15	18	6	5	4	14	To-tal
12		**5**	**2**	**1**		**4**	**3**																	
11	**3**		1	4						2											5			
9	**1**			**4**		**3**	**2**						5											
8	**4**		**1**			**2**	3																	
19						**5**			**4**				**2**			**1**			**3**					
3	**1**		**2**	**5**	**4**		**3**																	
2	**2**	4	**3**			**5**														**1**				
20						3	1				**5**		4			**2**								
16	3	1	5		**4**													2						
1												**4**				3			5	2		1		
7		4						**1**							**2**			5		3				
13										**1**			2							3	5	4		
17					**1**																			
10										5		2					1			3			4	
21				5						2	**4**					**1**							3	
22												5	4	3	**3**								2	
23	5	3													1					2			4	
15							4						1							5	**2**	3		
18																								
6													3						2		**1**	**4**	**5**	
5										3				4				**2**		**1**			5	
4																	2		5	**1**	4		**3**	
14	5											4	2							**3**		**1**		
Total																								

FIGURE 5. Matrix showing the leisure time choices of members of A Group IV, National Laboratory for Group Development, Bethel, Maine, July 11, 1950. Mutual choices in bold face.

Group IV, then we'll invite in the leaders of the whole Laboratory to see some real demonstrations of psycho-drama used in therapy." Although the table moving episode was never solved by admission of action, we did learn later that in a demonstration of psycho-drama, as espoused by this group, the participants are required to sit on the floor, a bit of information that was reminiscent of both the psycho-drama sub-group in our midst and the

one forced floor-sitting experiences of A Group IV. Such opposition concerning the removal of the table was raised that it was replaced for the next meeting.

Now the knowledge of a clique was known to the leader and at least two delegate group members. Further, it was known that it was a clique which intended to dominate. The marshalling of forces against the aspiring clique was not an easy matter, since most of the non-clique participants were virtual strangers to each other, and since the preoccupation of all group members with establishing their own status was marked. How better to establish one's own following than by accusing other strong members of foul play? The possibility of such an interpretation engendered caution on the part of the two delegates "in the know." As for the leader, he was powerless to divulge his appraisal of the situation, especially since his own leadership was under attack. In a rankless society why should there be leaders? Various members, particularly the members of the mental health team raised objections to a leader's having been designated for the group. Finally, after much bitter discussion, some arguing to retain the leader, others against, the senior author, like all but one of the other A Group leaders, was deposed as leader. This process, particularly since the mental health contingent were active leader-opponents, served as an issue around which sides could form, and the power-seeking nature of the clique group could be passed along more openly. The sociomatrix of July 4 (Figure 3) developed from precisely the same sort of preference indications as had been used a week earlier, clearly shows the reaction of the remainder of the group to the knowledge of the power-aspiring group in its midst. It was at this point of integration of the anti-mental health group that the sociometric election took place and the mental health group was temporarily routed.

The Sociometric Election.—The election of a delegate from each of the A Groups to serve as a member of the governing body of the Laboratory was considered by most of the A Group IV as an important event. At the end of the first week we knew that the mental health team which could count on the support of at least 8 members of the 23 in the group would use every device to elect one of their members because we had been told that one of their objectives for being at Bethel was to sell their type of psychodrama to the leaders of the Laboratory. The strategy used by the group was typical of American election strategy. One member and only one (Number 9 on Figures 1-5) was nominated from the mental health team. Mental health team members nominated two strong members who were not members of the mental health team which would of course have split the voting of

those not on the team. At this point Number 4 on the various matrices, Figures 1-5, made a very convincing speech in favor of "scientific-sociometric elections" saying she had frequently used the device. As can be seen from the various matrices she is a very strong person in the group. A vote was taken with many of the mental health team members and most others favoring a sociometric election. Later the mental health team leader and some others admitted that they did not know what a sociometric election was.

As Number 4 (Figures 1-5) and the group directed the election, three candidates were nominated sociometrically, with each vote being weighted by 3 if it was first choice, 2 if second and one if third choice. Number 9, Figures 1-5, of the mental health team and numbers 4 and 17, not of the mental health group, were nominated. Each candidate was required to make a speech stressing what he would attempt to accomplish for the group. Then a weighted sociometric vote was made to eliminate one nominee. Finally, the two remaining, numbers 9 and 17 were voted on in the same way. Number 17 was elected. Actually, although non-sociometric or non-weighted voting would have elected the mental health candidate, number 9, the sociometric election would have elected number 17, a non-mental health candidate without the last step. The mental health team had thus been out-maneuvered by the opponents through the use of the sociometric vote. All of the non-mental health members were over-joyed by the outcome because most thought the mental health team organized as it was would win through control of their own vote and by splitting the others' votes. That the sociometric election prevented this and that they had been able to carry it through was a source of encouragement for many.

It is obvious that up to this point no objective study of and practice in "human relations' skills in action programs," the supposed purpose of the A groups, had taken place. The group itself rather had become a study in human relations. But the power struggle was for the most part spent. The mental health group had not come into control, the anti-authoritarian sentiments of the group had been exercised in the deposition of the leader, individuals had set up pro-tem relationships with each other, and measures of status had accrued to some individuals in their respective sub-groups as the little drama was played out. The last week was in the nature of a truce, in which a mythical Inn was improvised from which certain ethnics were excluded. Days of planning and strategy were devoted to the blue print whereby these undemocratic practices could be overcome. Many members believed that effort could have been much more profitably applied to real situations and practice in human relation skills for which some delegates

had need and interest. But the impasse between the clique and anti-clique groups prevented anything but a sterile situation. Towards the end of the third and last week, thoughts were turning homeward and with realization that only a few days were left, group threat and strife became less real.

We have striven to present a chronological picture of the group's development—or dissolution—and to show sociometric devices which were an aid in an early awareness of the components as well as a determinant of the group's action, as in the sociometric election. The over-all picture is not very different than if it were viewed in retrospect, by an observer. Such an observer was William Foote Whyte, some of whose observations concerning the "cultural island" as a whole and A Group IV in particular are set down here by way of comparison.[6]

> Five out of the six groups went through periods of serious confusion and frustration. The sixth group was the one in which there was no doubt about who the leader was from start to finish. The staff-designated leader maintained that position throughout.[7]
>
> In one of the groups we did observe serious factional strife. It centered in three group members who had previously worked together, and another four who also made up a team in their own environment. As the threesome and foursome had also some contact with each other, they constituted a sub-group from the start. In fact, they met together the evening before the formal sessions opened and decided upon the sort of group process they would like to have in their regular "A" group. The first move in establishing this process was to overthrow the staff-designated leader and relegate him to the side lines. This they readily accomplished, but the vigor of their attack was such that they stirred up opposition. After the first sessions, this particular "A" group was divided into two sharply contesting factions with about a third of the members attached to neither faction but lost in the crosscurrents of the conflict and constantly wondering why no progress was being made.[8]
>
> For me the high point in this group activity came one afternoon at a point when the general discussion had completely broken down, and there were small group conversations going on all around the table. This went on for some time, and finally the staff-designated leader made an effort to restore order and resume the general conversation by pound-

[6] William Foote Whyte, *Leadership and Group Participation*, Ithaca, New York: New York State School of Industrial and Labor Relations, Cornell University, Bulletin No. 24, May 1953.

[7] *Ibid.*, p. 9. The undeposed leader, in striking contrast with the "Climate of the cultural island," from the very beginning structured his status-role in the group so that none doubted who was "boss."

[8] *Ibid.*, p. 11.

ing upon the table. This produced silence, but it also produced an immediate reprimand for such an "autocratic" act. Seeking to defend himself, the staff leader said, "Well, when the discussion breaks up, who is to pound on the table?" He was told, "The group will pound on the table." After that, the staff leader sat back and waited for the group to pound on the table. As the group never did pound, the confusion, conflict, and frustration, went on throughout the whole three-week period.[9]

Of the emotional tension and personal involvement, Whyte reports on the obviously stressful position of the staff-designated leaders who were given a job to do but were powerless to do it. That the meetings were no less disturbing to the delegates is illustrated by Whyte as follows:

> At one point in one of the meetings we observed a woman rendered completely unable to carry on normal activity. The group was to elect a representative to the delegate council. Each member was to write the name of his preferred member on a slip of paper. At this point in the voting the woman found herself unable to remember the names of other group members, although this was the fourth day of the activity, and she found her arm temporarily paralyzed so that she could not write.[10]

> We all noted an extraordinarily high degree of personal involvement. Bethel was an intense emotional experience for most people. Hardly any of them could go through it and remain detached and casual.[11]

Let us turn now from this to an analysis, first through the use of sociometry, and second, to the social elements and processes at work.

Analysis

Sociometric Device.—On June 28, the third day of regular meetings, and on July 4 and July 11, all members filled out blanks which required that they indicate A Group IV members 1) whom they would like to participate with in recreational activities, 2) who they thought were most productive in the group, 3) who were most like them in their philosophy concerning change and 4) with whom they would like to participate in small group work activities. Obviously, the first has some aspect of Helen Jennings'[12] psyche-group and the last some aspects of her socio-group with in-

[9] *Ibid.*, p. 12.

[10] *Ibid.*, p. 13.

[11] *Ibid.*, p. 15.

[12] Helen H. Jennings, "Leadership and Sociometric Choice," Sociometry, Vol. X, No. 1, February, 1947, pp. 32 ff. The socio-group resembles Parsons' and Bales' *task* or *instrumental* orientation—the psyche-group is a forerunner of their *expressive* or *non-task* orientation. See Talcott Parsons and Robert F. Bales, *Family, Socialization and Interaction Process,* Glencoe, Ill.: The Free Press, 1955. Of course, all of the con-

strumental or task leaders. Figures 1, 2, 3, 4, and 5 include only data from the psyche-group or non-instrumental criteria. They are cast in sociometrices which is "more abstract than a sociogram"[13] but useful for us because they permit specific delineation of the original mental health clique in the upper left hand corner of Figures 2-5 and the growth of the oppositional forces in the lower right hand corners.

Since one of the uses of sociometric techniques is the analysis of social structure (particularly the leadership-followership patterns and the cliques) interest is focused upon these items in the following discussion. In the interest of saving space chiefly, we decided to present only the analysis for leisure time choices. For most readers of SOCIOMETRY the following analysis will be covering old ground. It is included for the benefit of those not familiar with the methods used which can be helpful in various types of group work.

Method of Describing Cliques.—One of the standard procedures for isolating and studying cliques is through the matrix analysis which will now be described briefly. On Figure 1, the leisure time choices are presented. Thus number 2 chooses number 7 as his third choice. Number 1 and number 21 make no choices on this criterion. After a matrix of this type is constructed the next step is to ascertain the *mutual choices* whose importance cannot be overemphasized. One of the easiest ways to locate the mutual choices is to make an exact copy of a matrix such as Figure 1 and turn this on its axis placing one sheet (for instance the original) on top of the other (for instance an exact copy of the original) so that the column of numbers representing the chooser is over the numbers of those being chosen. When this is done and the pages held up to the light, the squares in which numbers on both sheets appear will hold numbers representing mutual choices. These may be circles as on Figure 1. Now as the persons represented by the numbers are arrayed on Figure 1 it is difficult indeed to detect cliques.

Isolating the Cliques Through Matrix Analysis of Mutual Choices.—For the matrix analysis of clique structure in A Group IV the July 4 test was chosen. In the isolation of various subgroupings a useful procedure is

cepts are comparable to groups or patterns of leadership in groups which are respectively *Gemeinschaft-like* as opposed to *Gesellschaft-like* as Ferdinand Toennies used the terms much earlier. Ferdinand Toennies, *Fundamental Concepts of Sociology, Gemeinschaft and Gesellschaft,* translated by Charles P. Loomis, New York: American Book Company, 1940.

[13] J. L. Moreno, *Who Shall Survive?* Foundations of Sociometry, Group Psychotherapy and Sociodrama, Beacon, N. Y.: Beacon House, Inc. 1953, p. 142.

to take the mutual choices from a matrix such as that on Figure 1 and rearrange the rows and columns so that as many as possible of the mutual choices fall along a diagonal line drawn from the left hand top corner to the right hand lower corner. On Figure 3 the mutual choices of two cliques as with fringe elements as of July 4 are described. To simplify the presentation, the same axis has been used for the June 28 and July 11 analysis shown on Figures 2 to 5. If we accept the criterion of leisure time as meaningful, it is obvious from an examination of Figure 2 that the life of A Group IV started with a subgroup, the mental health group, as described in the upper left hand corner. The reaction of the remainder of the group toward this situation is manifest in Figure 3 on July 4 showing a strong opposing subgroup in the lower right hand corner. As of July 11, the subgroup in the upper left hand corner of Figure 5 has consolidated the fringe elements and, as will be shown by the self-preference analysis to follow, has strengthened itself, while the other group has relaxed its opposition and is weaker, as judged by the criterion used, than it was on July 4.

Measuring the Cleavages or the Cohesiveness of Subgroups.—One of the best measures of the cleavages of a group is the "double ratio self-preference index" as developed by Joan H. Criswell,[14] for the various subgroups of a larger group. It is calculated by taking the actual ratio between in-groups and out-group choices and dividing this by the expected ratio between in-group and out-group choices.[15] It can be calculated from the data in Table I based on choices for leisure time partners allocated between the mental health and the non-mental health subgroup. As previously stated the reader may note this group at the left hand upper corner of the matrices

[14] Joan Henning Criswell, "A Sociometric Study of Race Cleavage in the Classroom," *Archives of Psychology*, Vol. 233, 1949, pp. 1-82. See also Criswell's article "Sociometric Methods of Measuring Group Preference," SOCIOMETRY, Vol. VI, No. 9, November, 1943.

[15] The expected or non-cleavage choices were calculated by the following formula as used by Criswell: Expected in-group choices equals $\frac{t(a-1)}{n-1}$. Here a represents the number of individuals in the group being considered; t is the total number of choices made by the group; n is the number of individuals in the test population. The minus 1 entries are to allow for the fact that the chooser does not choose himself. Substituting above for the mental health group we get $40 \times \frac{7}{22} = 12.7$. For the non-mental health group, $66 \times \frac{14}{22} = 42.0$.

in Figures 2 to 5. The opposing group forms at the lower right hand part of the matrices. Let us proceed to the analysis.

TABLE I

OBSERVED AND EXPECTED FREQUENCIES OF CHOICES FOR LEISURE TIME PARTNERS OF THE MENTAL HEALTH GROUP AND THE NON-MENTAL HEALTH GROUP JULY 4 — SUBGROUPS OF A GROUP IV, NATIONAL TRAINING LABORATORY IN GROUP DEVELOPMENT, 1950

		Group of Persons Chosen				
	No. of	Observed Frequencies		Expected Frequencies		
Group of Chooser	Persons	MH	Non-MH	MH	Non-MH	Total
Mental Health Group	8	28	12	12.7	27.3	40
Non-Mental Health Group	15	8	58	24.0	42.0	66
Total	23	36	70	—	—	106

The in-group or self-preference score for the mental health group on July 4 as measured by the criterion under discussion is calculated as follows: $\frac{28 \text{ divided by } 12}{12.7 \text{ divided by } 27.3}$ which is 4.96. If there were no cleavage this index would be 1. The in-group or self-preference score for non-mental health group on July 4 may be measured as follows: $\frac{58 \text{ divided by } 8}{42.0 \text{ divided by } 24}$ which equals 4.14. What initiated this remarkable growth in cliquishness? On June 28 the mental health group's self-preference index was 3.80 and the non-mental health group's self-preference index only .95 indicating that it was not a group as measured by this criterion at this early date in the sessions. On July 11 the mental health group's self-preference score had increased to 8.23 and the non-mental health group's self-preference score had fallen from 4.14 as measured July 4 to 2.98.

As these indices are compared with those of other studies all except the non-mental health group score at the beginning of the sessions, June 28, and at the end, July 11, are relatively high. The Chi-Square tests of significance for the tables from which these indices were calculated including Table I were all large enough to have probability values of less than .001.

As reflected in Table II, we can then trace the development of a schism in the life of A Group IV.

Leadership.—From the matrices the reader may count the choices received by various group members. Although leisure time choices are probably not the best indicators of potential leadership, especially task leaders, the other criteria indicate that the leaders of the two cliques especially on July 4 are fairly evident.

TABLE II

DOUBLE RATIO SELF-PREFERENCE INDICES FOR TWO FACTIONS IN A GROUP IV, NATIONAL TRAINING LABORATORY IN GROUP DEVELOPMENT, 1950

	June 28	July 4	July 11
Mental Health Group	3.80	4.96	8.23
Non-Mental Health Group	.95	4.14	2.98

Processes of Action and Elements of the Systems.—The case of attempted but unachieved organizational integration is the ironical case of a group, A Group IV, in a community which was supposed to make change its chief concern, clinging to previously established norms of leaderless, permissive, egalitarian self-exploration so completely that no status-roles were created for the social scientists who were told they were to be "trainers." It further provides an example of a group dedicated "to train delegates in social action based upon scientific assessment and controlled by democratic values and procedures" but partially made up of a sub-system which attempted to take over the group in a manner which we believe was rather undemocratic and to use the group and Laboratory as a vehicle through which to demonstrate to the Laboratory officials the values of a procedure called psycho-drama. The struggle between this group and the other members of A Group IV is the story of unattained goals so far as the Laboratory was concerned. Had organizational integration been achieved, a status-role[16] for the leader or trainer would have been established as was carried out in subsequent years; had the group been effective in improving the human relations skills of the delegates through the operation of the relevant status-roles, what we call *social cultural linkage*[17] between the Laboratory, its A

[16] Briefly stated, the status-role prescribes that which is expected of a member of a social system in a given social situation.

[17] We describe social cultural linkage as the process whereby the elements of at least two systems come to be articulated so that at least in some ways they function as a unit. The elements with the exception of status-role just mentioned are discussed below. If social cultural linkage had been achieved in A Group IV the plans of the A Group leaders would have been put into action. The leader sent as a change agent to A Group IV would have made a status-role for himself in the group.

Group leader and A Group IV, would have been established. The three processes most important in establishing or failure to establish social cultural linkage are communication,[18] decision-making,[19] and boundary maintenance.[20] Here we shall not analyze in detail the relation of these processes as they transpired or failed to transpire in A Group IV. Suffice it to say that value orientation of the Laboratory community at the time was such as to oppose patterning or structuring relationships or specifying goals. We believe that Whyte[21] is correct in concluding from the A Groups he observed and experience elsewhere that "when . . . there is no recognized leader and when the group is entirely free to make any decision whatsoever—there will be confusion, conflict, and frustration until a definite pattern of group organization arises."

The important social systems[22] involved in the failure to achieve integration and to attain the goals set by the Laboratory are first of all A Group IV and its two most important sub-systems, the mental health group of 8 members, and the opponents of this group which came into existence as a social system in an attempt to prevent control of the A Group IV by the mental health group. The other social system of importance is the Laboratory community which, during the previous Laboratories from 1947 to 1950, had developed certain basic patterns which tended to persist even among new delegates who had never directly participated in them. Each of these four systems may be described in terms of their 1) ends or objectives, 2) norms, 3) status-roles, 4) power, involving both authority and influence, 5) social rank, 6) sanctions, 7) facilities, and 8) territoriality. Insofar as A Group IV became an integrated social system it had these components.

But the group never agreed on the ends or objectives[23] it was to follow.

[18] We define communication as the process by which information, decisions, and directives pass throughout a system and ways in which knowledge, opinions and attitudes are formed or modified.

[19] Decision-making, as we define the term is the process whereby alternative courses of action are reduced.

[20] Boundary maintenance is the process whereby the system retains its identity and interaction patterns; i.e., retains its equilibrium involving both integration, or capacity for teamwork, and solidarity, or morale.

[21] *Op. cit.*, p. 18.

[22] For our purposes here we define a social system as an organization or going concern composed of members who interact more with members than with non-members when operating to attain the system's objectives.

[23] We define ends or objectives as those things which members of a social system expect to accomplish through the operation of the system.

Some thought the group was to be used as a device for demonstrating psycho-drama, others that it should become like the morning or T Groups, devoting its energies to the sensitizing of members to their own and other personalities. In consequence Whyte[24] observes:

> On the basis of what I've seen at Bethel, I would suggest that, when the members do not have some problem that has meaning for them outside of the discussion group, there will be a tendency for the group interaction to become disorganized. The individuals, having no reference points against which to check their progress toward some goal, will become preoccupied with watching each other. They will be highly sensitive to questions as to who is "taking over the group."

Likewise, the group never agreed upon the norms[25] by which it was to operate. A small sub-system at least, thought it justifiable to use the whole group for its own purpose, the demonstration of psycho-drama. There was little consensus on the control of power in the group but in general the norms of the Laboratory—an equalitarian, permissive standard seemed to be expected. In this context Whyte's[26] description of the conflict in norms between the two sub-groups becomes particularly meaningful:

> . . . there were two diametrically opposed schools of thought concerning what the group should do. One school (the mental health team) held that the deadlock could be resolved only if each member in turn described to the group how he felt about what had been going on. Critics of this school referred to the "feeling-draining" approach or to the "cesspool theory of Group Dynamics." They argued that the interpersonal conflicts could be resolved only as the group members became actively involved in carrying through a course of action. The feeling-drainers felt that members of this school were afraid to make the emotional analyses necessary for good group process.

The status-roles of the A Group IV trainer and the leaders of the mental health group came most directly into conflict, thus preventing social cultural linkage.

As indicated previously the norms of the Laboratory were such that the status-role of the leader was not specified at any time during the three week period. That social scientists would have failed to attempt this may justly be charged to their discredit. At least in the case of the senior author

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[24] *Op. cit.*, p. 26.

[25] Norms are defined as those rules which, through the prescription of what is socially acceptable as well as unacceptable, govern the application of means or facilities in the attainment of ends or objectives. In everyday terminology they are "rules of the game."

[26] *Op. cit.*, p. 13.

who had previously engaged in operations where similar objectives were sought, and not being aware of the particular value orientation of the Laboratory, there was a tacit assumption on his part that his role as leader would be accepted. As stated previously the only leader of the 6 A Groups who was not deposed was the one who in no uncertain terms at the very first session patterned relationships, specified what his status-role was to be and what was expected of the delegates. This leader had been a T Group leader in previous years but some other A Group leaders with T Group experience failed to make this specification and were deposed. Whyte,[27] after observing the six groups concluded that:

> My hypothesis is that where the interaction of members of a discussion group is unpatterned, the members will feel (and will report later) that they are not making progress toward their individual goals or toward any group goal . . . when the leadership of a group is in doubt, members will become preoccupied with the leadership problem and with their relations with each other in general and they will not be able to move ahead toward their goals until progress can also be made in developing a regular pattern of interaction.

Despite the verbalized group rejection of such social elements as rank and power, the sociometric choices clearly indicate that the group was far from devoid of its ranking and power-invested individuals.

From the sociometric matrices in Figures 1 to 5 the social rank[28] and social power[29] of the members of A Group IV may be judged. Although leisure time or psyche-group choices are probably not the best indicators of potential leadership, the other criteria used in this sociometric analysis do indicate that the two opposing cliques each had members with more than ordinary social rank and power. Thus on the criterion of productivity in the group, one of the leaders of the mental health team on June 28 received the second largest number of choices. By July 4 as the opposition began to organize, his rank order on the criteria of productivity had dropped to 5.

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[27] *Op. cit.*, p. 25.

[28] Social rank or standing is derived from the basic values of a system which determine the standards by which members are rated. It is derived by many characteristics, including status-roles, the role performance within and outside the system, wealth and power in and outside the system, and personal factors insofar as these are pertinent in the particular reference group or system for which the statement or rank or standing is expressed or implied.

[29] We define power simply and briefly as control or potential control over others. It is composed of *authority*, or the legitimized right to influence others, and non-authoritative *influences* of many kinds.

On July 4 all the 4 members of highest rank as determined by being the most frequently chosen on the criterion of productivity in the group were in the clique which had risen in opposition to the mental health clique. Almost exactly the same development took place on the criterion of choices for members to work with a small select group. On June 28 at the early stages of the Laboratory, one of the members—a leader just mentioned in the mental health group received second place in frequency of choice for a small work group. By July 4 his rank on this criterion had dropped to 6 and all above him were in opposition to him. We may say then that in the structuring of power and rewarding of social rank, A Group IV was torn asunder with a polarization of both social power and rank. The struggle for social rank and power in the five A Groups which were unpatterned and which deposed their leaders was very bitter indeed.

Group sanctions[30] operated more effectively within each of the subsystems of A Group IV than for the whole system. The core members of the mental health team had all functioned together in a bureaucratic relation and were able to function under their own system. The election defeat of their delegate and the rather vicious attacks by non-members did not act sufficiently as sanctions to prevent the action. On the contrary, perhaps as a result of the opposition and as the cleavage scores indicate the mental health group continued to become more integrated, of course at the expense of integration in A Group IV.

Facilities[31] and territoriality[32] played less important roles in the A Group IV interaction than is frequently the case. The importance of facilities is high-lighted by the attempt at the removal of the table. Also the fact that the tables were round, thus preventing any special position of prominence for a given status-role helped to further the equalitarian atmosphere of the Laboratory. Territoriality likewise had its influence in the space bound nature of adjacent dormitories, dining hall and group meeting buildings. Emotions were probably more intense than if group dispersal to scattered living quarters had been the predominant pattern. Many other territorial or spatial arrangements were designed to further the value system of the Laboratory.

[30] Sanctions are those mechanisms which provide members with rewards for conforming with the ends and norms of the system and which impose penalties for failure to do so.

[31] Facilities are means other than the elements mentioned used by the systems to attain its ends.

[32] Territoriality involves the locus and spatial arrangements and requirements of social systems.

V. Outcome

So far as the Laboratory is concerned the experiences of the A Groups, and their analysis by Whyte and his co-workers led in succeeding years to much more realistic planning and execution for the various operations devised to bring the training which A Group leaders were supposed to bring to their groups. Many of Whyte's recommendations have been followed, and egalitarian sentiments have not prevented the status-role of the teacher and trainer from functioning. Also cliques and teams are not knowingly placed together in the T or A groups.

The outcome for members of A Group IV varied with the experience, objectives, personality and many other characteristics. Some members of the mental health team felt frustrated. They had hoped and planned to use the group for the demonstration to the whole Laboratory of their psychodrama. Many members with psychological training continued to analyze the experience in terms of the personalities of other members and the reaction of these upon themselves.

For the senior author, the experience, if not the most pleasant, was one of the most vivid learning experiences he had ever had in a similar period. It would be expected that as a sociologist he would stress the importance of the institutions mentioned above in the analysis. But even though he had experience in various unstructured semi-frontier situations, never had he had a comparable opportunity of viewing ordinary normal human beings, chosen for their attainments in human relations skills, behave when the institutions are tampered with. Such an experience led him as a sociologist to a more realistic understanding of the function of institutions for the normal processes of living and learning. If a few day's experience in an unstructured environment can result in actual or near personality breakdown, is it any wonder that instrumentation, disruption and brainwashing can be used effectively in the aggrandizement of power and the attainment of other objectives. The Laboratory can contribute greatly to our knowledge of these processes and, as sufficient competence and interest is given to sociological processes and elements, the objective of improving human relations may be attained. It is not enough to attempt to understand the functioning of the personality system—the social system must also be understood.

Appendix A

Briefing directions for the role-playing "Sneak day-counsellor" scene. This scene, as many others developed at Bethel, attempts to create "the box" situation in which any course of action has its perils. "The box" here is the

position of the counsellor. If he aligns with the students he is anti-administration. If he aligns against the students he is not fulfilling his role of student-counsellor.

Objective of second day: teaching diagnostic skills describing counselling

I. Briefing for all A Group members.

This is a scene involving a High School counsellor and a representative student body concerning a breach of rules.

A. In the past, before graduation, 90% of students have had a sneak day. The administration and teachers have always warned and threatened but custom has persisted.
B. The High School is the most important single general organization in the community.
C. A new principal was hired at the beginning of this school year with the particular charge that he tighten up on the discipline and general behavior of the students.
   1. Principal has met with all the senior class members; he has issued an ultimatum that anyone who didn't come to school without excuse on any school day would suffer severe penalties.
   2. Nonetheless, 30% still sneaked; among the 30% were the class leaders and some not too well adjusted students.
D. All the students who sneaked and couldn't furnish excuses are not to be permitted to participate in commencement and graduation exercises. The diplomas will be mailed to them.

II. At this point select your counsellor by lot. The counsellor is then briefed before the group as follows:

A. As counsellor you are relatively secure; you have been here six years; the people and the students like you.
B. There is a general feeling around town that last year when a new principal was to be selected you had aspirations for the job.
C. Nonetheless you are on good terms with the principal.
D. You know that one of the students who skipped school is the child of one of the board members.

III. At this point the counsellor is asked to leave the room. Then the three students are selected by lot. They are briefed before the group as follows:

A. One of the three students is a boy who did not sneak; nevertheless he feels sort of guilty about not being one of the group who went; he is righteously indignant about the punishment to his classmates because of his guilt feelings and he wants to share their punishment.
B. A girl is one of the representatives; she shares the same reactions as those noted above for the boy.

C. The president of the class is the third representative; he was part of the 30% who didn't show up at school on sneak day.
These three have been delegated by the students to represent their cause.

At this point ask students to leave the room. Give them the three attached direction sheets with the information that they are identical, that they are to read them and plan their strategy while you brief the observers, and that if the counsellor is anywhere around in the outside corridor that he should not be made aware of your instructions or the strategy you are planning.

IV. Divide remainder of people in room into three groups, each of which will be responsible for one of the following assignments: Each should elect a reporter.

1. To what extent and how does the counsellor involve the students; to what extent and how does he help them to grow through experience.
2. To what extent and how did the counsellor assess the total situation.
3. How could the students have improved their strategy?

Procedures: trainer should use alter ego or interviewing technique.

Reference for A Group leader. Characteristics of good counsellor; listens to story; he involves them in self diagnosis; ascertains what forces are at work; he has student's development at heart; he might participate with students in strategy to get the principal and others to better understand problems of students. Counsellors do not preach.

SELECTION OF PARTICIPANTS IN A MUTUAL AID GROUP IN RURAL GREECE

IRWIN T. SANDERS

During 1952-53, while spending a sabbatical year in Greece, I had occasion to make a study of a mutual aid group digging potatoes near the village of Neohori, in the vicinity of Thebes. My interest in Balkan groups of this type dated from the sociometric study of a Bulgarian wood-cutting group in the 1930's[1] as well as the study of other mutual aid groups such as the *sedenki* in Bulgaria[2] and the *moba* in Yugoslavia.[3] Greek sources con-

[1] Sanders, Irwin T. "The Sociometry of a Bulgarian Wood-cutting Group". SOCIOMETRY, Vol. II, Oct. 1939, pp. 58-68.

[2] Idem., *Balkan Village* (University of Kentucky Press: 1949).

[3] Vlajinac, Milan Z. *Moba i Pozajmica: Narodni Obicaji Udruzenoga Rada.*

sulted[4] made much of the traditions of mutual aid among the Greek villagers and led to an interest in finding out whether observations made earlier in other Balkan countries would hold true for Greece.

The Purpose and Activities of the Neohori Group

Although it was late March many of the villagers still had not dug up their potatoes for they were waiting for an order from a commission merchant. When word came that he wanted 50 or 100 kilograms then the peasant with whom he contracted would call together some fellow-villagers to help him get these potatoes dug for delivery. They spoke of this as *dhaniki ergasía* (borrowed work). The group under study consisted of 25 men and 18 women including the merchant and the four helpers directly under his supervision who sorted and sacked the potatoes and loaded them into the truck standing nearby. Sometimes the merchant brings his own helpers and sometimes employs them locally but expects them to have certain minimum skills for the task of sorting and sacking. The field being dug was 4 stremmas (1 acre) in size and provided enough work to keep most of this company busy from 8 a.m. to about 4 p.m.

The work of the group was under the direction of the owner of the field, who told the men where to start. He even helped set the pace as the men worked in a row across the field. He would stop his digging from time to time to see how the women were getting along with their picking and cleaning of the potatoes and would occasionally confer with the commission merchant to see that all was going well at that end. The workers brought their own spades and other tools.

Who Is Invited and Why

The chief purpose of this study was to find out how such a group got formed. A complete list was made of each worker and his or her relationship to the owner noted. Here in this village of about 125 houses it so happened that of the 22 men invited (does not include owner, commission merchant

(*Moba* and *Pozajmica:* Popular Customs of Mutual Work) Belgrade, 1929, 598 pp. (in Serbo-Croatian).

[4] Koukkidhis, Const., *To Pneuma Tou Synergatismou Ton Neoteron Ellinon Ke T'Ambelakia O Protos Syneterismos Tou Kosmou,* (The Spirit of Cooperation of the Modern Greeks and of Ambelakia, the First Cooperative of the World), Athens, 1948, 245 pp. (In Greek.)

Petropoulos, D. A. "Ethima Synergasias Ke Allelovoitheas Tou Ellinikou Laou" (Customs of Cooperation and of Mutual Aid of the Greek People). *Epetiris Laographikou Archiou* (Yearbook of the Folklore Archives), 1943-44, pp. 59-85. (In Greek.)

and his helper from outside) only 6 were not related to the owner. Each of these six was a neighbor. Of the 17 women invited (does not include the housewife herself) all but 4 were related to the owner (not to his wife). These four were likewise neighbors. This tendency toward including kin was more than mere chance since in a village of this size the owner could easily have constituted a group containing many more friends and acquaintances who were not related to him. But the people themselves said, "Relatives are preferred in work of this sort". It turned out that some relatives who were not good workers were invited "because they were relatives", which showed that kinship values outweighed the economic values.

Another factor affecting selection was the possession of a potato field so that the relative or friend could be paid back in like manner. If a man was not in position to repay another man when asked to do so he would send his wife and daughter even though a woman's contribution was not considered equal to that of a man. "We don't keep such close count that such a substitution bothers us" was the way one villager expressed himself when asked what people would think of a man who did this. If no member of the family is in position to repay, then the work is compensated for at the rate of 20,000 drachmas (which at this time amounted to $1.33; two months later devaluation made the amount equal 67 cents) for a day's work. In this particular group under study five of the men were being paid in cash at this rate since the owner wanted the work done quickly and called on those few people without potato fields of their own whom he would not repay in kind.

As workers, the girls in their late teens and early twenties are preferred to middle-aged women, although the latter are by no means excluded. The housewife is not apt to invite anyone with whom she has quarreled but may invite two other women who have quarreled with each other but who are on good terms with her. These two women both accept the invitation but do not speak to each other during the course of the day. Men are less inclined to be affected by previous disagreements and may invite even those with whom they have had sharp political differences. Individuals, usually women, can volunteer to join the group and are accepted.

Invitations are extended to the women by the wife of the owner of the field, usually the night before, at the fountain or at the homes of the invitees. Sometimes the woman issues invitations at dawn by making the rounds of the homes. The owner usually invites his men friends the evening before at the stores, coffeehouses or at their homes. Those issuing the invitation will say, "I'm going to 'pull potatoes'. Will you come and help me?"

Some women have better reputations as cooks, and people working in

their fields will say, "Oh, we'll eat well today". Yet this is not believed to affect the acceptance or rejection of the invitation. The owner and his wife keep a list of all of those who have helped them and check off an individual's name as soon as he has been repaid for his labor. There is no one in this village who has the reputation of not paying back the work that others contribute, showing the seriousness with which this obligation is assumed and discharged.

Perhaps the best summary of the basis on which the workers were selected was that given by the owner himself. He pointed out that every man had his "own following, consisting of his relatives, godparents, and in-laws, and friends". Study showed that this was close to the order of priority within which the selection is made.

Anyone familiar with these mutual aid groups in peasant societies will notice many similarities between this potato-digging group in Neohori, Greece, and those elsewhere. As a culture trait it certainly has much in common with the Bulgarian *sedenka* and Serbian *moba* mentioned earlier. This Greek group, as did the Bulgarian wood-cutting group, by the necessity of the work to be done, brought together both women and men whereas many kinds of mutual aid groups require the work of either men or women. Furthermore, where kinship factors loom so large we find proof of the familistic nature of peasant society in contrast to the commercialized society where people would more likely be selected because of their efficiency and economic contributions. A study a few years hence of these mutual aid groups around Neohori should give an interesting indication of the degree to which Western economic values have replaced the traditional values associated with the family.

A COMMON BASIC POSTULATE OF SOCIOMETRY AND THE SOCIOLOGY OF COOPERATION

HENRIK F. INFIELD

"Equitable participation" is a postulate of sociometry's social philosophy. It is this postulate that makes "Who Shall Survive?" sociometry's leading question in both connotations of the term, principal and prompting. How to reduce to a minimum or to eliminate altogether the waste of its human element undoubtedly is a pre-eminent question of all civilized society. In the perfect society all ought to be given a chance to participate equitably,

to realize the fullness of their potentialities, to live the full life, to "survive". In such a fully "sociometrized" society the question would become obsolete.

"Equitable participation" is also a chief postulate of organized cooperation as practiced in our times. Taking this postulate as their guide, the Equitable Pioneers of Rochdale, the initiators of the cooperative movement aimed at its full, comprehensive realization in a "home colony of united interests". The astounding success of their consumers store, which was to serve as a means to this end, relegated the original goal to the background and the movement, it might be said, became arrested on a level of partial, segmental achievement. As such it offered interest mainly to the economist.

It moved into the field of the sociological view only with the return to its original comprehensive intent marked by the establishment of the first modern cooperative community. The Kvutza Dagania Aleph came into being in what was then Palestine and is now the State of Israel, in 1911. Since then modern—as distinguished from the "utopian"—cooperative communities have sprung up in many parts of the world. They go by different names and vary in their economic pursuits as well as in the degree of comprehensive practice of cooperation. The Israeli Kibbutzim, the Mexican Ejidos, the Saskatchewan cooperative farms are rural and chiefly based on agriculture; the French Communities of Work are urban and chiefly industrial; and the American "intentional" communities have found their most significant realization so far in a therapeutic cooperative community, Gould Farm.*

The highest degree of comprehensive practice is observed by the Kibbutzim, where each works according to his abilities and receives in return whatever the group has to offer in goods and services to satisfy his needs. The other groups are less extreme, combining in different degrees cooperative with individualistic features, to the point even of adopting a differential, though of course equitable, scale of remuneration, as is done in most of the French Communities of Work.

* Cf. this author's: *The American Intentional Communities.* Group Farming Research Institute Sociology of Cooperation Monograph No. 2. N. J. 1955. Glen Gardner Community Press.

4. SOCIOMETRY IN THE ARMED FORCES

EFFECT ON MORALE OF INFANTRY TEAM REPLACEMENT AND INDIVIDUAL REPLACEMENT SYSTEMS

Research Memorandum 53-26 August 1953, Personnel Research Branch, The Adjutant General's Office, Department of the Army

I. Nature of the Problem

A. This is a report which contrasts the morale and combat efficiency of replacements sent to Korea by units of four-man teams with the system of individual replacements.

B. Experience during World War II and subsequently in Korea indicated that a modification of the method by which infantrymen are processed through the Army replacement stream was desirable. At the time this study was made infantry replacements were processed as individuals. That method is purported to have several disadvantages. Being individually processed, he is generally separated not only from the buddies he acquired during basic training, but also from the NCO's and officers he had come to know and to whom he had become accustomed to turn, when he had complaints or was in need of advice. In travelling through the replacement stream he is crowded in with a lot of strangers and yet feels himself in a social vacuum. He has no feeling of belonging to any group.

A suggested method of remedying this situation was to make replacements by means of teams composed of four men who have trained together and become well acquainted. This suggestion resulted in the formation, for experimental purposes, of three carrier companies, each consisting of approximately 36 four-man teams.

II. Method

In order to evaluate the effect on morale and combat efficiency of this new procedure Army observers were sent along with the various companies. Instruments designed to measure morale and combat preparedness were administered to two companies (No. 2 and 3) sent to FECOM and Korea. To furnish a basis of comparison the same instruments were administered to a group of men who had arrived as the same kind of replacement but who had been processed as individuals. The hypothesis was that the men of the

carrier companies would show a higher morale and better initial combat efficiency than the individual replacements.

A. *Samples*

In order to evaluate the morale and combat efficiency of the men of the carrier companies—hereinafter generally referred to as the experimental group—it was necessary to establish a comparative control group. This group should match the experimental group as near as possible in all respects except that they should be individually processed. They were selected at Camp Drake (the replacement depot in Tokyo) at the time the experimental groups were assigned to their ultimate division. An unfortunate event happened at the time when the control group for Carrier Company No. 2 was chosen. A group of men just out of basic training at Fort Dix had been chosen for controls when word reached Fort Drake that the 7th U.S. Infantry Division had been heavily engaged and suffered a number of casualties. Replacements had to be assigned at once. The men originally assigned as control group for Carrier Company No. 2 were assigned and a new control group assigned from men arriving on the next boat. Since these men did not match the experimental group as closely as could be hoped for, certain allowances must be made in the interpretation of the results of the comparisons. The control group chosen for Carrier Company No. 3 was, however, an excellent match.

It is necessary to consider four groups. Each differs in some respects from the others. A description of the four groups is given below.

Group 2E—Carrier Company No. 2 (Experimental) consisting of about 38 teams of four men or about 150. These men had just completed basic training, given a pre-embarkation leave, and shipped overseas. The teams were formed at the end of the twelfth week of basic training by allowing each man to choose his team mates on a training-company-wide basis.

Group 3E—Carrier Company No. 3 (Experimental). The same strength and composition as Group 2E, except that the men were assigned to teams in alphabetic order at the end of their twelfth week of basic training. If differences in attitudes are found between Groups 2E and 3E the method of the formations of teams should be borne in mind. The men in Group 3E were resentful over the fact that they had not been allowed to choose their buddies. At the same time they strongly favored the team system over the individual replacement system.

Group 2C—Carrier Company No. 2 (Control). This company of approximately 150 men came principally from a levy on First Army (ZT).

They all carried a Light Infantry MOS but many of them had had additional training and carried a "potential" AA MOS. They were a somewhat more militarily mature group. A spot sample indicated that they had on the average a mean difference of two more months of service than the experimental group. Their morale was noticeably depressed. They thought they had "beat the front line rap" and were resentful over being shipped abroad as infantrymen.

Group 3C—Carrier Company No. 3 (Control). This group was a good match in strength, training, intelligence (AA 1 score) and geographic origin for its experimental group.

B. *Variables*

Two instruments designed to assay morale were administered to all four groups at the 2d Infantry Division Rear the day before the men were sent to their ultimate assignments with the various regiments.

Variable 1. One of the instruments designed to measure difference in morale, Replacement Attitude Schedule, DA PRT 2541 consisted of 35 questions. Each question was followed by five possible answers. The men were asked to indicate which one of the five best indicated his personal reaction. Most of the answers were scored on a continuum of one to five. A score of 1 reflected the poorest morale and 5 was considered indicative of the highest morale, thus the score for each man had a possible range between 35 and 175.

The various hypotheses on which individual items were based were as follows:

Relationship among associates. Questions were designed to test the hypothesis that morale will be higher for teams than for individual replacements. Constant association and cooperation should develop a feeling of confidence and security in fellow team members.

Training. The hypothesis basic for these questions is that training in small, closely associated groups will result in a greater degree of confidence in the adequacy of training.

Attitude toward the Army. The hypothesis here is that morale will be higher for men whose views are the least at variance with the indoctrination program.

Relationship to authority. The hypothesis here is that acceptance of, and confidence in, designated leaders by the group maintains morale at a high level.

Esprit de Corps. The hypothesis here is that the greater the identification of the soldier with his job, group, and task, the higher his morale.

Variable 2. The other instrument designed to measure differences in morale was the Opinion Survey, DA PRT 2542. It consisted of 15 items each of which had five answers. The men were requested to choose the answer which best reflected their reaction. The "keying" was done as stated above, and the possible range of scores was between 15 and 75. The content of the questions was aimed at measuring his reactions to the trip overseas, the experiences encountered during the trip, and after his arrival at various points in the Far East.

Variable 3. It was also further desired to assay differences in combat performance between the experimental and the control groups. To obtain this difference, if any, Performance Evaluation of Infantrymen Overseas, DA PRT 2556 was designed. It consisted of a single mimeographed sheet handed to platoon leaders, and on which they were asked to give each man in the squad a rating on his overall combat performance. Ratings ranged from 1—the best—to 8—the worst possible.

C. *Field Procedure*

The morale instruments were administered on the 19th and 20th of October to Carrier Company No. 2 and its control group. The place was the 2d Infantry Division Rear messhall. The NCO of the two groups acted as proctors. The administration was uneventful. Administration of the morale instruments for Carrier Company No. 3 and its control group took place on the 26 and 27 of October.

In order to acquaint the various officers with the purpose and method of the combat performance rating and to enlist their cooperation the investigator visited regimental and battalion headquarters and every company in the division. This was time consuming, strenuous and not always a safe task. Two regiments were on the line and one in support. Many difficulties were encountered in obtaining the rating on both the front line and support troops. Front line positions as "Old Baldy," "Porkchop," "Arrowhead" whose approaches were exposed could be visited by appointment only and when smoke screens could be laid down. Rear supporting troops were detailed to honor guard duties at distant points. These troops were consequently difficult to find and reach because of the security conditions maintained. From each company a roster was obtained by platoons. To disguise the purpose of the ratings so that raters would not feel called upon to express any opinions on team vs. individual replacements, the rosters which were requested contained the names of all the men in the platoons that had received any replacements from either the experimental or control groups.

Seven typed copies were made and returned to the companies with instructions to have ratings made by 1) the platoon commander, 2) the platoon sergeant, 3) the platoon guide (or assistant platoon sergeant), 4) the four platoon sergeants.

The result of all this work was rather disappointing. Actually the 2d Infantry Division front was quieter during this period than anytime before or after. There was little combat. The enemy made only two major attacks. By coincidence they both hit at outposts held by UN troops attached to the 2d Division. Thus, the raters had little opportunity to obtain information about the combat behavior of the replacements. In view of this situation even the results that were obtained must be viewed with some skepticism.

III. Results

A. *Statistical Analysis of Morale Instruments.* The first analysis consisted of finding the mean and standard deviation for each of the four groups separately (Table 1).

TABLE 1

Means and Standard Deviation of Total Scores on "Replacement Attitude Schedule" DA PRT 2541 (Variable No. 1)

Group	Carrier Co. No. 2			Carrier Co. No. 3			Carrier Co. 2 & 3		
	N	M	σ	N	M	σ	N	M	σ
Experimental	140	93.61	12.41	158	95.80	11.58	298	94.77	12.03
Control	133	92.08	13.82	127	94.21	13.26	260	93.12	13.59
Critical Ratio		.961			1.064			1.513	

TABLE 2

Means and Standard Deviations of Total Scores on the "Opinion Survey" DA PRT 2542 (Variable No. 2)

Group	Carrier Co. No. 2			Carrier Co. No. 3			Carrier Co. 2 & 3		
	N	M	σ	N	M	σ	N	M	σ
Experimental	136	39.04	5.53	159	39.19	5.60	295	39.12	5.57
Control	136	33.71	6.79	127	37.71	6.96	262	35.65	7.16
Critical Ratio		7.09			1.95			6.33	

The general opinion expressed by observers was that 1) little, if any, differences could be observed between the morale of the two experimental groups, 2) very large differences were manifest between Carrier Company No. 2 experimental and its control groups, 3) smaller but still significant differences were present between the experimental and control group of

Carrier Company No. 3; 4) higher morale in control group of Carrier Company No. 3 (pop. 3C) than in the corresponding group of No. 2 (pop. 2C). Each of the above observations were verified by results obtained from the analysis of PRT 2542 (Table 2). The critical ratio between the experimental and control group were significant at the 1% level for both carrier Company No's. 2 and 3.

Table 1 gives the comparison of total scores on PRT 2541 but does not discriminate in the same manner. The critical ratios obtained were not significant. Evidently the total scores of the two instruments do not measure the same factors.

In order to investigate how the differential in morale expressed itself in specific questions each of the fifty items, 35 from PRT 2541 and 15 from PRT 2542, were analyzed separately, and compared with the various hypotheses upon which the questions were formulated. The results indicate that the experimental groups were found to react significantly more favorably on all eleven questions dealing with relationship among associates.

Some such questions were:

1- 1[1] "What do you think of the idea of going overseas with the squad with whom you spent the last month of training?" (Critical Ratios 4.90**)[2]

1- 5 "How certain are you that your fellow soldiers will do their part in combat?" (C.R. 2.54*)

1-15 "How often do the men discuss the battle dangers you might run into overseas?" (C.R. 2.10*)

1-24 "How would going into combat with the men you trained with affect your efficiency in battle?" (C.R. 2.86**)

1-30 "Do you think your buddies take an interest in your problems?" (C.R. 4.52**)

The critical ratios ran from 2.10 to 15.43.

The hypothesis that training in small, closely associated groups would result in greater confidence in morale, presented a very different situation. The report made by the Army observer who watched the training of the two experimental carrier companies at Fort Dix contained critical comments of performance of the NCO's assigned to the companies. This was further substantiated by the derogatory comments, made by the team replacement members. This condition was particularly true on Carrier Co. No. 2. Some

[1] The first figure refers to number of variable, the second to item number in that variable. (Thus the first entry refers to the first question in PRT 2541.)

[2] One asterisk means significant at the 5% level.
Two asterisks means significant at the 1% level.

of the items that incidentally reflected the attitude of the team members to the NCO's of the training companies were as follows:

1- 7 "How well do you think the squad you trained with in the last month of training would show up under combat condition?" (C.R.—1.58)

1-13 "How well did your squad do in the last month of training?" (C.R.—3.07**)

1-19 "How well did your squad do in basic training in comparison with other squads?" (C.R.—2.80**)

2-12 "Do you have confidence that the type of training you had back in the States was good preparation for Combat?" (C.R. —3.14**)

The observed negative relationship of the above critical ratios indicates that the team-members were much less confident of their training than were the individual replacements. The hypothesis that higher morale is associated with training in smaller more compact groups cannot be tested since the uncontrolled factor of the poor NCO's was introduced fortuitously.

The third hypothesis which was to be tested by questions incorporated in PRT 2541 was that morale was higher for men whose views about the Army at least at variance with the objectives of the indoctrination program. Experienced military observers would, at the outset, have felt sure that this hypothesis would not be verified. "G.I. gripes" will be "G.I. gripes" whether they are spoken by men with high or low morale. The expected difference would be that men with high morale do not allow their gripes to color all their attitudes whereas men with low morale brood over their "gripes" and are apt to react negatively to anything new or old "even if it is good."

The finding that no difference in attitude exists between the experimental and control group is demonstrated by the replies to the following questions:

1- 4 "From the standpoint of enjoyment of your work, how would you say you feel about your job in the Army?" (C.R.—1.27; not significant)

1- 8 "In general, do you feel you have gotten a square deal in the Army?" (C.R.—.40; not significant)

1-14 "Do you think the Army looks out for the welfare of its men?" (C.R. .11; not significant)

1-16 "Do you think that Army life is better or worse than you had expected?" (C.R. 1.10; not significant)

1-22 "All things considered, how well do you think the Army is run?" (C.R. .33; not significant)

1-33 "Do you think a combat man has more chances for promotion than a soldier who does not enter into the fighting?" (C.R. 1.69; not significant).

It can be seen that the hypothesis is not substantiated. If anything can be said there is a slight tendency for the team members to have a more negative attitude than the control group.

If, on the other hand, the attitude is tested not with respect to generalization stated above, but by reaction to a specific situation the picture changes completely. An example of this is given below:

2- 5 "How did the Army handle things from the time you left your basic training camp to the time you boarded ship?" (C.R. 7.12**)

The fourth hypothesis to be tested was that acceptance of and confidence in designated leaders by the group keeps morale high. The problem here is complicated by the fact that while the men in the experimental group, particularly in Carrier Company No. 2 thoroughly despised the NCO's to which they were assigned during their basic training period, nevertheless they were loud in expression of approbation of the commissioned and non-commissioned officers assigned to them when the carrier companies were formed. This ambivalence of attitude can be illustrated by the answers to some questions.

1-12 "How well do you think your non-coms know their stuff?" (C.R. 127 not significant)

1-21 "When your non-coms gave you something to do, did they usually tell you enough about it so that you could do a good job?" (C.R. .17; not significant)

1-29 "How much does it bother you to have to do things for which you don't have a good reason?" (C.R. .24, not significant)

The hypothesis that high morale is associated with the greater acceptance of the goals of the Army indoctrination program is not sustained. The critical ratios are not significant on any of the items tapping this factor. When the question is raised as to the interest of the officers and NCO's in the welfare of the men entrusted to their care the picture is reversed. It is known from other sources that the officers and NCO's were able to do the men of their companies some good turns on the trip abroad. This attitude is illustrated by replies to the following questions:

1-27 "How much interest do your non-coms take in your welfare and personal problems?" (C.R. 4.00**)

1-35 "How much interest do your officers take in your welfare and personal problems?" (C.R. 3.46**)

The responses of the experimental group (critical ratios significant at 1% level) indicate that they were much more favorably impressed by the

interests which the leaders took in their welfare when compared to the responses of the control group.

Esprit de Corps is the last hypothesis proposed for testing under variable 1 (PRT 2541). Only one question was used to tap the trainees feeling of pride in his unit. It was found that the experimental group showed significantly less pride in his training unit than did the control group. *Esprit de corps* cannot be expected to be acquired in a unit which exists only for basic training purposes. It can be generally acquired only in a unit to which the man is permanently assigned and has a record of accomplishments in which the man can take pride. The question of *esprit de corps* must remain unanswered. At the same time it is worth remembering Colonel Marshall's statement ("Men Against Fire"), that *esprit de corps* is based on comradeship.

An additional hypothesis is that a group with high morale will meet specific situations in an objective manner, whereas the low morale group will meet all experiences with a negative mental set and won't like it "even if it is good". Such an hypothesis may be tested by answer to such questions as the following:

2- 1 "Did you enjoy your trip overseas?" (C.R. 3.48**)
2- 9 "Do you feel that much effort was made to see that your trip was pleasant?" (C.R. 3.27**)
2-11 "In general, how have you felt during the time you have been overseas?" (C.R. 3.02**)
2-13 "How are the camp quarters overseas?" (C.R. 7.81**)
2-14 "How has the food been overseas?" (C.R. 13.56**)

The significant critical ratios of the above questions demonstrates that there is an overwhelmingly favorable attitude on the part of the experimental group toward these subjects and situations than is shown by the control group.

Statistical Analysis, Results and Conclusions on the Combat-Performance Ratings

As stated earlier this problem cannot be dealt with in any satisfactory manner in this report. Very few of the replacements had seen any actual combat by the time these ratings were made. Many of the names of the replacements were crossed out by the raters, indicating that they did not know enough about the men to rate them. The results of the rating experiment may be summarized in Table III. It should be recalled that 8 is the best rating obtainable and 1 the poorest. Also that seven forms were distributed for each ratee, so that if all had received ratings there would have been a

total of approximately 150 x 2 x 7 = 2100 ratings for the experimental as well as for the control group. Thousands of other ratings were received for men belonging to the platoons to which the replacements were assigned but who were not part of this project.

TABLE 3

DISTRIBUTION OF RATINGS FOR CARRIER COMPANIES NO. 2 (9TH AND 38TH INF. REGTS.) AND NO. 3 (23RD INFANTRY REGIMENT)

Rating Assigned	Experimental				Control			
	9th	38th	23rd	Total	9th	38th	23rd	Total
8	10	6	14	30	12		9	21
7	20	7	20	47	18	2	16	36
6	117	16	127	257	64	8	54	126
5	180	41	300	521	122	37	166	325
4	53	28	160	241	113	22	112	247
3	43	21	98	162	85	22	62	169
2	22	10	31	63	19	3	26	48
1	13	8	21	42	1	2	18	21
Total	458	137	768	1363	434	96	463	993
M	4.85	4.39	4.57	4.65	4.52	4.26	4.41	4.44
σ	1.41	1.66	1.33	1.40	1.34	1.18	1.35	1.36

It can be seen that the mean scores of the experimental groups in all three regiments as well as for the total of the groups were consistently higher than the control groups but that none of these differences are significant.

CONCLUSION AND DISCUSSION

The problem of testing for differences in morale and combat efficiency between the experimental and the control groups was somewhat complicated by the fact that many experienced observers had already pronounced the experimental group noticeably higher in morale than the control group. One of the instruments (PRT 2542) designed for the measurement of morale gave upon analysis results which in every detail corroborated these observations. The other instrument PRT 2541 gave inconclusive results. Detailed analysis of the items of the two instruments showed that some of the hypotheses on which they were formulated could not be sustained by the results. Two of the hypotheses were, however, abundantly sustained. The first is that high morale is associated with a feeling of comradeship and confidence in buddies within the unit. The other hypothesis sustained was that the group with the higher morale met each new situation in an objective manner, whereas the group with low morale had a negative mental set. If morale is

measured by the above two hypotheses then the experimental group consistently showed higher morale than did the control group. This confirms the observations made by the many officers that the experimental group, consisting of the two carrier companies, had a higher morale than their control group.

Insofar as combat-performance is concerned no positive answer can be advanced. The reason for this is that practically none of the replacements saw actual combat during the period of observations. Hence many of the raters did not feel that they could rate the replacements, and the ratings obtained must be regarded with caution. Actual results of analysis show a differential in favor of the experimental group in all three regiments to which experimental and control groups were assigned, but these observed differences cannot be said to be significant. The replies to certain items in the questionnaires led to the conclusion that the men of the Carrier Companies considered their basic training inadequate for combat duty. To what extent this lack of training became a contributing factor to their over-all combat efficiency cannot be ascertained from the data in this study.

On the basis of both the findings which are rigorously established, and those which can be inferred, it appears that system of sending replacements for light infantry overseas by four men teams will result in higher morale and probably in higher combat efficiency being shown by such replacements.

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SOCIOMETRIC TECHNIQUES FOR DIAGNOSING GROUP ILLS

E. PAUL TORRANCE

If a group is to improve its performance, it needs to know "what's wrong with it"—in what ways it is not already performing at its maximum. There is a need for group assessment procedures for diagnosing the difficulties groups experience in functioning as groups. Most of our diagnostic procedures, however, are designed for use with individuals. Yet it has become trite to say that a group of skilled individuals does not necessarily make an effective group.

Of the procedures available for diagnosing group ills, perhaps the most widely used are sociometric techniques. Diagnosis of group ills was, in fact, the basic motive behind Moreno's development of the technique (21, 22, 23). He believed that inquiry into the nature of the foundations of human society is necessary for any genuine plan for its reconstruction in accord with the requirements of well-balanced interrelations (23). He also believed that sociometry offered the greatest promise as a measure for a deeper understanding of society and a key to the treatment of its ills (22). Much of its use, however, has been for research purposes and its use in treating group ills has for the most part remained somewhat intuitive.

A notable attempt to make sociometric data more diagnostic and certain observations unnecessary is that of Polansky, Lippitt and Redl (27). They were concerned with problems of developing choice techniques in small face-to-face groups, where the research interest is on group treatment. This study, however, fell far short of its purpose and the observational correlates of choice-behavior remained unclear.

Of all of the stream of work in sociometry concerned with group diagnosis, the following seven concepts impress the author as promising aids:

a. Sociographs
b. Indices of Groupness
c. The Multi-Relational Sociometric Survey
d. Negative Sociometric Choices as a Measure of Group Tension
e. Stability of Sociometric Choices
f. Concentration of Liked and Disliked Individuals
g. Role distribution.

In this paper, the contribution of each of these concepts will be reviewed. An attempt will then be made to outline a comprehensive approach to the use of sociometric data for group diagnosis and the fundamental research required to develop it.

Sociograms

The sociogram is basic to sociometric theory and still remains perhaps the most practical and most widely used sociometric technique in group diagnosis. The usefulness of the sociograph technique rests upon Moreno's theory of psychosocial networks (21). Its value in group treatment is illustrated in Moreno's work at the Hudson Girls School (24), Taba and Elkins' work with an eighth grade class (35), and others. Fessenden (5) has described several interesting applications in diagnosing and treating debating teams. He found that morale and productivity were very low in a team in

which the structural of the group was similar to that of a wagon wheel; that is, the group was polarized about the adult leader and no real group had been developed. Later, in a similar group, he found that this structure could be changed by placing emphasis on group activity and group responsibility. After one year, this team functioned for the next year without formal faculty leadership. In another group, Fessenden found an obvious closed-clique which could dominate the class without opposition. He discovered that this was supported by the teacher's "laissez-faire" approach. Under a stronger democratic approach, the structure changed and it was possible to form effective groups for projects.

Because of its basic qualitative nature, however, sociographic analysis has not been popular in research. Clark (3), analyzing the structure of combat rifle squads, claimed that sociographic analysis is a valid method for analyzing group processes without the necessity of direct observation of the groups in action. Its use in research, however, has been largely limited to group case studies.

Indices of Groupness

The various indices of groupness give quantitative data for the researcher and presumably reflect some group characteristic important in group diagnosis. Some of these indices are of the common-sense variety; others are quite complicated. Proctor and Loomis (28) describe three of the common-sense type: Group Expansiveness, Group Cohesion, and Group Integration. Group Expansiveness is computed by dividing the total number of choices made by the group by the number in the group. Group Cohesion is obtained by dividing the number of mutual pairs by the total number of possible pairs. Group Integration is the reciprocal of the number of isolates (individuals receiving no choices). All of these indices require an unlimited number of choices. Criswell (4) presents formulae for group integration when a designated number of choices is allowed. The principal formula is as follows:

$$R = N\,(N-1)\,p^2$$

in which R = the expected number of reciprocated choices

N = the number of individuals in the group

p = the probability that a given individual will be chosen by another individual.

If each individual makes d choices, $p = \frac{d}{N-1}$.

Criswell also discusses the mathematical problems involved in comparing groups on the basis of such indices. Bronfenbrenner (1) developed and used three types of group indices: Coherence, Isolation, and Cleavage. His indices are based on the concept of deviation from chance expectancy, as are most of the other indices of groupness which have been developed. Lemann and Solomon (16) have also suggested several indices of group characteristics. One of the more promising is an index of Group Insight which Lemann and Solomon defined as the discrepance between self-ratings and mean rating received. For a measure of cohesion, they divided the subjects into five status groups according to a normal distribution and then obtained distributions for each of the groups studied. The more members at the extremes, the lower the cohesion. Comparisons were made of the percentages in each group in the tails of the distribution.

Most of the indices which have been suggested give information about the general health of the group but tell little about the specific nature of the malfunctioning. Cervinka (2) made some attempt to solve this problem through his dimensional theory of groups. He defined as a "groupoid" the extent to which one reference entity, such as cooperativeness, binds people together and so contributes to forming the group. He maintained that indices of cohesion, stability and solidity will predict such phenomena as the group's longevity, its unitary or effective functioning in measured respects and its disorganizing shock or decay.

A number of prediction studies have utilized some of the indices of group cohesion. Havron, Fay, and Goodacre (9 and 10) used a measure of cohesion to predict combat unit effectiveness among rifle squads. They found that an index of group cohesion correlated .77 with scores on a group field problem. Havron, Lybrand, Cohen, *et al.* (11) also found that the number of members nominated by the squad for an ideal rifle squad was a good predictor of squad effectiveness. Strupp and Hausman (34) found that sociometric measures indicating attractivenes of maintenance crews for members were significantly correlated with group productivity.

The Multi-Relational Sociometric Survey

One of the more promising recent concepts is the Multi-Relational Sociometric Survey technique reported by Massarik, Tannenbaum, Kahane, and Weschler (20). The data consist of information concerning prescribed, perceived, actual, desired and rejected relations. A step preliminary to obtaining data concerning these relations is the specification of the principal activities of the group or organization (goal-directed and nongoal-directed).

From these data, it is possible to compute six types of indices: Understanding, Normative Conformity, Affective Conformity, Satisfaction, Affective Atmosphere, and Centralization. These indices provide information on: (a) the extent to which the organizational blueprint is understood (indices of Understanding); (b) the extent to which the organizational blueprint is adhered to by the existing interactions (indices of Normative Conformity); (c) the extent to which "ideal", desired interaction patterns are actually realized in practice (indices of Affective Conformity); (d) the extent to which a pleasant emotional feeling tone predominates (indices of Affective Atmosphere); and (f) the extent to which powers vested by the organizational blueprint are concentrated in a particular person or group of persons (indices of Centralization). The authors state that the balance between affect, reality, and organizational fiat may be expected to have implications for productivity, morale, and job satisfaction.

A big advantage of this approach is that implications for corrective actions are rather clear. A low index of Understanding, for example, would indicate that the members of the organization have not been adequately informed concerning the organizational blueprint. The logical action is to supply the needed information.

Negative Choices as an Index of Tension

The use of negative sociometric data as an index of group tension is one of the simplest, yet one of the more promising diagnostic concepts. Smucker (33) maintains that these negative data provide the possibility for discovering the tensions and disruption potentials of group structure. Moreno has also always emphasized the importance of negative sociometric data (24). Just knowing that the tension level of a group is high should be important to an administrator in treating the groups with which he is concerned. It does not prescribe the appropriate action, but it does suggest certain alternatives: regrouping, changing leaders, conducting therapeutic group discussions, changing leadership technique, or the like.

Stability of Sociometric Choice

Another simple but promising construct is that of stability of sociometric choice. Festinger and Hutte (6) found that if persons in a group feel that those members of the group whom they like best dislike each other, this tends to make them uncertain and unstable about their interpersonal relations in the group. Holt (14) has also focused attention on the importance of stability of coalitions in groups. There is a general dearth of longitudinal

studies demonstrating the relationship between stability of sociometric choice and group effectiveness. In one such study reported by Levi, Torrance, and Pletts (17), stability of sociometric choice from the beginning to the end of a two-week survival training course was found to be related to subsequent combat effectiveness. The more effective crews were more stable in their choices. The authors emphasized the importance of providing group experiences through which members of a group can become well acquainted with one another and through which sociometric structure can become stabilized. They suggest that such experiences be provided early in the history of a group. Thus, if the behavior of a deviant member cannot be accepted, pressures for changes in group composition would be exerted at an earlier date to permit stabilization of structure well before the beginning of a combat tour.

Concentration of Liked and Disliked Members

Muldoon (25) conducted a study to determine whether or not groups differ in their attitudes toward their popular and unpopular members, and, if so, how such traits are related to group cohesiveness. In 42 classes of high school students, he found that two cohesiveness measures correlated negatively with like and dislike concentration measures; that is, groups that showed most agreement as to who were liked and disliked members generally were rated less cohesive by both members and non-members who knew the groups.

Role Distribution

The concept of role distribution within groups has been developed by the Crew Research Laboratory of the Air Force Personnel and Training Research Center (12). Haythorn of this Laboratory administered a role description questionnaire asking aircrew members to indicate who on the crew was described by the items. His findings suggest that the distribution of role behaviors among the formal crew positions is significantly related to crew personal liking and to average crew mission ratings. Factorial procedures revealed four factors: (a) maintaining standards of performance, (b) behaving in a nurturant manner, (c) behaving upon an awareness of situational needs, and (d) maintaining crew coordination and teamwork. Although the Crew Research Laboratory has reported no attempts to apply the role distribution concept in a diagnostic and/or therapeutic manner, it appears to have promising potentialities.

Schutz (31) has combined sociometric measures with personality characteristics and roles of group members and maintains that such procedures

enabled him to obtain striking results where more conventional sociometric techniques failed to afford insight into the group structure. Schutz also obtained findings which support the conclusion that personality measures can be used successfully to predict the pattern of personal liking and desirable working partners among group members. A similar approach is currently being used by Kenyon and Helen Runner in work at the USAF Survival Training School.

A Proposed Approach to Sociometric Diagnosis

The comprehensive approach which will be proposed in this paper is based upon a study of what linkages hold groups together under the stress conditions of survival in emergency and extreme conditions (36). In this study, involving approximately 1000 critical incidents from approximately 200 group survival experiences, it was concluded that the linkages which hold groups together under stress are: affect, power, communication, and goal. If this classificatory scheme is capable of describing the forces which hold groups together under stress, it would seem to provide an adequate approach for diagnosing group ills.

Actually, what is being proposed is not vastly different from the Multi-Relational Sociometric Survey of Massarik, Tannenbaum, Kahane, and Weschler (20). Two of their indices refer to affect linkages and the other four refer to power. In another study (32), some of the members of this research group demonstrated relationships between communication and the indices referring to affect and power linkages. Even if communication and goal-linkage indices are closely related to indices of affect and power linkages, it still seems useful from a diagnostic standpoint to consider them separately. The author also feels that the simple classificatory scheme of affect, power, communication, and goal has a potency lacking in other such systems.

Affect Linkages

The emphasis of most sociometric procedures has been affect or liking and disliking. As pointed out by Roby (29), it has been difficult to obtain more than weakly inferential evidence concerning the causal relationship between sociometric measures and measures of group performance. The rather low correlations between sociometric indices and measures of group performance may result from an over-emphasis on this dimension. Martin, Darley, and Gross propose that "the energy which goes toward the maintenance of friendly interaction may reduce the total amount of energy available for the carrying out of the group's major purpose of functioning" (19).

At the same time, the potentially disruptive effects of negative affect discussed by Smucker (33) must be recognized.

Three major problems face the sociometrist in developing adequate diagnostic indicators of the affect linkages of a group: (a) selection of appropriate criteria, (b) determination of the method of indicating affect, and (c) determination of the meaning of various types of diagnostic indicators.

Needless to say, not all sociometric criteria are effective in eliciting information about affect linkages. For example, several of the members of an aircrew studied intensively by the author and his associates disliked their aircraft commander (leader) but they all wanted to remain on his crew. They said, "We don't like him but he is the best pilot in the Air Force and we would fly with him anywhere". The determination of appropriate criteria for eliciting diagnostic information concerning affect linkages requires study of the essential relationships of the members of a group. Although all choices may be, to some extent, contaminated by affect, some choices appear to be based primarily on the basis of personal liking or disliking while others appear to be based primarily upon other considerations. Although logical analysis in the choice of criteria may be defensible as a preliminary measure, fundamental research is needed to determine the extent to which affect guides choices on various criteria.

Three major alternatives are available in deciding upon the method of indicating affect: (a) a limited number of rejections and/or choices, (b) unlimited number of choices and/or rejections, and (c) indications of degree of liking or disliking of each member of the group. Each has somewhat different diagnostic possibilities. The work of Havron, Fay, and Goodacre (9, 10) and others give encouraging results for the unlimited-choice technique and the work of Libo (12) and unpublished studies conducted at the USAF Survival Training School give similarly encouraging results from indications of degree of liking or disliking. There is, nevertheless, a need for fundamental research in this area. There are no doubt numerous factors which determine the optimal method: size of group, intensity of relationships of members, hierarchical structure, etc.

Perhaps the most crucial problem in diagnosing affect linkages is the determination of the meaning of the various types of sociometric indicators. Obviously, indicators of affect must be studied in relation to other indicators in order that their meaning be properly understood. The example already cited of the aircrewmen who disliked their aircraft commander but wanted to remain on his crew provides a good illustration of this point. Affect-linkage indicators alone give a somewhat misleading picture of the problems

of interpersonal relations within this crew. Some indices, such as the Affective Conformity and Affective Atmosphere indices already referred to, involve relationships between two indicators. Even here, the meaning of these indices is not entirely clear.

The presence of mutual pairs in groups is generally regarded as healthy and there is some theoretical and research evidence to support this contention. Little is known, however, about the diagnostic significance of various types of clique formations. Current studies of the author and his colleagues suggest that certain types of clique formations are unhealthy and result in low group integration and in intensification of the feeling of aloneness of the rejectees. Work concerned with the classification and meaning of various constellations of cliques is needed. The work of Muldoon (25) on concentrations of liked and disliked members is a beginning in a desirable direction, and more empirical studies of the diagnostic meaning of high concentrations of choice and rejection are needed. Diagnostic means might possibly be expressed in more meaningful terminology than "cohesiveness".

Power Linkages

In general, diagnostic indicators of the malfunctioning of power linkages appear to have inspired more research than any of the other three types of linkage. Thus, the meaning of some of the power-linkage indicators is fairly clear. Massarik *et al.* (20) have given us three rather meaningful indices with fairly clear therapeutic implications. Their index of Understanding measures the extent to which the organizational or power structure is understood. Deficiencies identified by this index should be remediable by supplying correct information. The index of Normative Conformity measures the extent to which the organizational blueprint is adhered to by existing interactions. Discrepancies revealed thereby may indicate a need for changing the blueprint or the institution of procedures for insuring closer adherence. Their index of Centralization measures the extent to which powers vested by the organizational blueprint are concentrated in a particular person or group of persons. Although the diagnostic significance of this index is unclear when viewed alone, its meaning is likely to become more obvious when viewed in relation to other information.

Several studies suggest that group consensus of power is very important in group effectiveness. Heinicke and Bales (13) found that groups low in efficiency and satisfaction never adequately solve the problem of status or power consensus. Low groups fail to develop a pattern of relationships for deciding who stands where and whose solutions are apt to be accepted. They

tend to express more and more dislike of the top status members on the sociometric choices and depose them one after another. Levi, Torrance and Pletts (17) found that the degree of power consensus in aircrews at the end of survival training or the extent to which the designated leader is able to validate his power role is important in combat effectiveness. Schutz (31) found that compatible groups have a more unambiguous power structure than incompatible groups. The leader-keyman relationship has received the attention of Fiedler (8). Effective work groups tend to have accepted leaders (a) who are generally distant toward their co-workers and have close relationships with their keymen, or (b) who have generally close relationships with co-workers but who are distant toward their particular keymen.

From the studies just cited, it appears to be a clearly established fact that power consensus is essential to group effectiveness. Many of the intricacies of patterns of power relations remain to be explored. Appropriate preventive and therapeutic measures need to be evaluated. Fessenden's (5) use of change in leadership technique already mentioned is encouraging. Leadership training concerned with the leader's problems of validating his power role in emergency and extreme conditions is promising. Such training, however, needs to be based on more adequate information concerning what the leader must do in order to validate his power role.

There is special need for developing concepts for understanding and explaining power phenomena. The leader-keyman relationship concept being studied by Fiedler (8) is promising. Another potentially useful concept is that of negative identification developed by Torrance and Ziller.[1] When a leader is strongly rejected, the phenomenon of negative identification may be operating This may be the result of discrepancies in the role expectancies of the leader and his co-workers. Therapeutically, it may be possible to modify the leader's role behavior to conform more closely to the expectations of the group. Or, it may be possible to modify the group's expectations of the leader. On the other hand, the basis of the negative identification may be so deeply rooted in differences in personality, values, and background that such considerations are transcended. Changes in group composition may offer the only hope of alleviating the condition.

In the case of instructors and outside experts in dealing with groups, particularly unorganized groups, the concept of "locus of power" appears useful. This is clearly illustrated in the "Blizzard Study" conducted by the

[1] Torrance, E. P. and R. C. Ziller. Negative identification as a factor in group ineffectiveness. Reno, Nevada: Crew Research Laboratory Field Unit #2, Stead Air Force Base. (Unpublished draft.)

author and his associates (37). It was found that one particular man in the group held most of the power of the group. The instructors failed to recognize this and spent their energies trying "to keep him in his place" rather than in trying to use his influence. During the blizzard and the ensuing period, the group more or less went berzerk. At first, no one exercised power in holding the group together. Finally, the instructors started exercising power in a very dictatorial manner and made serious blunders recognized by the group. The unofficial power figure was tempted to lead the group in "mutiny" but desisted.

Communication Linkages

Sociometric literature is almost void of reports of research concerned with effective diagnostic indicators of communication difficulties in groups. The work of Festinger, Schachter, and Back (6) and others supports the hypothesis that the existence of a friendship between two people implies the existence of an active channel of communication. Shepherd and Weschler (32) also concluded that the most useful index of communication difficulties is obtained by establishing the number of dyadic relations in which inferred communication difficulties can be inferred. Their findings also indicated that great differences in status between individuals and/or groups, and poor affective relations were accompanied by communication difficulties. Breakdowns in organizational structure were also found to be related to communication ills.

It seems reasonable to expect that effective diagnostic indicators can be developed by rather direct approaches. One obvious technique is to chart the flow of information through observational techniques. When this can be done effectively, the trouble should be easily identified. It should also be possible to obtain clues concerning emotional factors which impede communication—status differences, negative identification, autistic hostility, etc. One presumed advantage of sociometric techniques, however, is that they enable the researcher or practitioner to gain an understanding of group processes without direct observation. Thus, more complete exploitation of sociometric techniques is needed. Sociometric questions could include both work situations and social situations, job-oriented communication and non-job-oriented communication. If desired, indices could be constructed in much the same way as those devised by Massarik *et al.* (20). The following are examples of questions which would yield data for such indices:

(a) From whom are you supposed to obtain information about ———?
(b) From whom do you obtain information about ———?

(c) To whom are you supposed to give information about ———?
(d) To whom do you usually give information about ———?

These data could be checked against official task analyses to identify discrepancies.

There is reason to believe, however, that the analyses which could be made from such data may not hold for emergency situations. There is some indication that in emergencies, groups accustomed to under-communication tend to over-communicate (everyone starts talking to everyone else at the same time) or there is a complete breakdown of communication with every man acting for himself. On the other hand, it seems that groups with good patterns of communication react to emergencies by a minimum of talk, keeping communication channels open for essential information. Everyone knows what can be expected from everyone else. There is a need for fundamental research aimed at the development of diagnostic indicators of communication difficulties in stress situations. It has been maintained (36) that every case of group panic can be traced to a breakdown in communication in which someone failed to tell the group what he was doing.

Goal Linkages

There is also a paucity of useful sociometric concepts for diagnosing malfunctions in the goal linkages of a group. It is true that many of the criteria used in practice and in research are goal or job-oriented, but data yielded by choices based on such criteria do not necessarily permit diagnosis of deficiencies in goal linkages. Of course, if individuals highly chosen on goal-oriented criteria are known to be incompetent or ineffective in accomplishing their jobs, we probably have a valuable diagnostic indicator. Individuals are apparently placing personal bias ahead of goal involvement. Many studies have shown high correlation between sociometric ratings and other criteria of job effectiveness. This is all the more reason to expect that deviations between goal-oriented sociometric ratings and other ratings of job effectiveness are likely to have diagnostic significance in treating groups.

Jennings' (15) concept of the sociometric differentiation of the sociogroup and the psychegroup may provide a fruitful approach to developing diagnostic indicators of difficulties in goal linkages. The sociometric structure of the sociogroup is based on a criterion which is collective (goal-oriented) in nature, while the sociometric structure of the psychegroup is based on a strictly private criterion, totally personal in nature. It is to be expected that the members of a group bound together by strong goal linkages

will be willing to subjugate the special interests of his own psychegroup to those of his sociogroup.

Fundamental research might be directed toward devising procedures for testing the potential conflict between psychegroup and sociogroup interests. One approach would be to determine whether psychegroups interfere with the communication and power linkages of the sociogroup. It should also be possible to devise both real and hypothetical choice situations which would test this conflict. A striking illustration of such a situation is afforded by the Blizzard Study already mentioned. The 20 subjects had been divided into three groups, each with a designated leader. When the blizzard arose, the psychegroups took precedence over the sociogroups. One psychegroup composed of four of the most capable members from two groups teamed together to build an excellent shelter instead of working with members from their own groups. As a result, the members of this one psychegroup made themselves comfortable in an adequately constructed shelter, dried their wet clothing and footgear, and prepared a hot meal before going to bed. Others built shelters which collapsed and/or failed to protect them from the cold. Most of them crawled into their sleeping bags as soon as possible (even though it was just past noon) without drying clothing and without eating. This could be regarded as a clear diagnostic indicator of defective group-goal linkages. With a little imagination, sociometrists should be able to invent similar tests.

Also relevant to this problem are the findings of Palmer and Myers (26) concerning productivity among radar crews. Their results showed that crews which performed best on Range and Radar Pickup tended to choose off-duty associates from battery personnel outside of their crew. They also found that the less often status personnel chose nonstatus personnel as pass companions, the better the Radar Maintenance (—.33). Both of these findings suggest that psychegroup formations within a sociogroup may interfere with goal achievement.

Another intriguing concept is offered by Willerman's (38) "organizational involvement as reflected in type of member complaint". Willerman found that active members' complaints referred more frequently to obstacles preventing satisfactory group functioning, while the complaints of the passive members referred more often to the group's interference with their extra-group life, or were of a personal nature. One fundamental research task would consist of comparing the diagnostic usefulness of Willerman's self-rating type of measurement technique and a modification of his technique using the same categories translated into sociometric or peer ratings with unlimited choice permitted.

Again, research and development in this area should not stop short of experimentation with therapeutic procedures for strengthening goal linkages once the diagnostic indicators are developed. Longitudinal studies are obviously required.

Summary

An attempt has been made to examine the potentialities of sociometric techniques for diagnosing group ills. From the stream of work in sociometry concerned with group diagnosis, the following seven promising concepts were identified and evaluated:

a. Sociographs
b. Indices of Groupness
c. The Multi-Relational Sociometric Survey
d. Negative Sociometric Choices as a Measure of Group Tension
e. Stability of Sociometric Choices
f. Concentration of Liked and Disliked Individuals
g. Role Distribution.

An attempt was then made to outline the essential elements of a comprehensive approach to sociometric diagnosis, to identify major deficiencies in knowledge required to fill out this outline, and to suggest approaches for remedying deficiencies. The proposed approach is centered about the concept that groups are held together by linkages of affect, power, communication, and goal and that an adequate set of diagnostic aids must identify weaknesses in these linkages. It was proposed that diagnostic indicators in each of these areas be devised and that they be analyzed in relation to one another much as a clinician regards an individual psychometric profile.

For each of the types of linkage it will be necessary to develop appropriate criteria, determine the most effective methods of indicating choices, and determine the meaning of various indicators. Numerous fundamental and research issues require attention. Particularly is there need for experimentation on promising preventive and therapeutic techniques for remedying and/or preventing the ills reflected by the diagnostic indicators.

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5. RESEARCH IN SOCIOMETRY

THE SOCIOMETRY OF THE DYAD

LEWIS YABLONSKY

The dyad as a group form deserves more theoretical and research investigation. This union of two in close interaction has become, at least in our western culture, a foundation of both individual and group strength. This paper will explore a theory of the dyad and its dimensions; its effect and implications to each member's individual social atom; and the sociometric situations which develop from the dyad as the nucleus of its own social atom.

THE DYAD AND ITS DIMENSIONS

The dyad is a group of two in a relationship of some duration in which both mutually agree to participate through interacting within the framework of some social specifications. It is not necessary that the members of the dyad willingly participate as for example in the case of a marriage imposed on one or both members, but that there be mutual agreement to go on with the relationship. By a period of some duration it is meant that the dyad is formed on the basis of a protracted "contract"; that both agree to participate for some time. A casual friend whom one meets on occasion would not form a dyad union. The social framework or structure may be defined and perceived quite differently by both, however there must be some elements of reciprocal agreement. For example in a therapy dyad the patient may see it as a situation of great hopelessness, and the therapist sees the patient improving remarkably; however both agree it's a therapeutic relationship.

The relative intensity of dimensions of the dyad are of importance in understanding its structure. Following are a number to be considered:

(1) *Duration.* Some dyads are lifelong relationships over which the members have no control. For example with a parent and child no matter how much rejection may develop continual references to the relationship may be made, if only by people other than the two involved. It is an inescapable lifelong condition. In other instances it may be quite temporary, as in the case of a lawyer and his client who join forces around a particular situation which is expected to conclude a relationship after it is consummated. Lovers often find the duration factor a crucial issue in the relationship—as one or the other seeks a redefinition of the structure.

(2) *Personal meaning.* How much or how little the dyad involves the members "personally" is an important issue. The members may be strongly personally enmeshed in terms of psychological complements, love or hate feelings. On the other hand they may interact primarily in terms of "impersonal" social factors as for example the lawyer and his client.

(3) *Value of Dyad.* The dyad can be a most rewarding human experience for one or both members, be quite meaningless and neutral or be wholly negative.

(4) *External and Internal Pressures to Participate.* Whether or not the structure is maintained because of internal or external forces is an important facet to be understood. A marriage which is maintained "because of the children" is quite a different matter from one motivated by the strong personal wishes of the husband and wife.

(5) *Time.* The amount of time given to the relationship is another facet deserving attention—not only the actual amount but the amount in terms of some social standard.

(6) *Importance to Social Structure.* How important the dyad is to the official social structure helps in understanding the relationship. The relationship between the leaders of two world powers may be of prime importance to international relations; however this is a different matter than the official structures' necessity for having the form of a parent-child dyad. This format is one of necessity to our social structure for, among other functions, socializing the child.

Of course all of these dimensions of the dyad are interrelated in its structure. These dimensions of the dyad present possible conceptual tools and measures for more effectively understanding this type of structure.

The Dyad and Its Social Atom

No one is a member of only one dyad or group. Relationships extend into many kinds of group structures as individuals grow and reach out into the social world around them. Often their relationships become complicated and entangled by their participation in groups which overlap or conflict. This broad problem has been explored through reference, primary, marginal and other group theories. The focus here will be on the dyad as a unit and its relationship to other groups.

One example of the implications of the dyad on the social atom of the individuals involved is the marriage relationship. This dyad form will be used as a primary example in the following analysis.

Hypothesis I. The cohesiveness and structure of each individual's personal social atom is a determinant of the degree of rearrangement which occurs when each member becomes a participant in a dyad. For example in societies such as India and China which have tightly knit family ties the marriage is structured more in terms of the families of orientation than the husband-wife dyad. On the other hand, in the American social system where the family of procreation is more emphasized, the consanguinal ties become considerably rearranged in terms of the new family unit. In the case of second generation American families great stress usually develops because of the attempts to break old-world tradition.

Hypothesis II. The degree of involvement, the intensity of cohesiveness and the relative importance of the dyad to the members determines the organization of each individual member's personal social atom. The "middle-class" golfer, evening out with the boys, club joiner husband has by indication more outside relationship involvements of his social atom than the marriage dyad oriented husband. Possibly his wife will also have more involvements in other activities than the marriage. It would be useful to research this type of dyad by examining characteristics of infamily outfamily orientations and relationship in different "class" categories.

Hypothesis III. The relative cohesiveness of the dyad determines the interrelationship of both member's "personal" dyads.

A married couple who have established a cohesive unit will tend to eliminate or reduce the cohesion of those individual relationships which are not shared by the other spouse. Individual husband or wife relationships which were formerly weak will tend to become intensified by a mutual attraction on the part of both spouses. *They will tend to cultivate those relationships which they can share and to reduce and eliminate those which are not mutually accepted to the degree that the relationship maintains its cohesiveness.*

The traditional "I'll pack my bag and go home to mother" wife reflects this situation when the marriage dyad loses some of its meaningfulness. When the couple makes up "going home to mother" is no longer as important.

Hypothesis IV. The dyad can only maintain its position as the nucleus of its own atom when there is a strong cohesivness in its structure. The "two against or versus the world marriage" offers the best example. In relationships where "outsiders" relate to the unity they will interact with one or the other of the members almost as if the other were present. In reactions of decision although the "other" may not physically be consulted

there is a "thought level" interaction which determines responses. These dynamics are most subtle, yet would be found to be quite present if they were systematically investigated.

This type of cohesive dyad versus the world is not only found in marriage relationships. In the police department detectives who work together and consider themselves partners present another possible illustration. Because of the dangerous nature of their work it practically becomes an all-or-none form of dyad. That is either they work closely with and accept the other fully; or if there is any lack of confidence they tend to work "together" but yet shift for themselves when the job becomes precarious. This all-or-none aspect of the dyad which meets the world as a unity is an area requiring further research.

Summary and Conclusions

The dyad is a group form through which it may be possible to study larger social institutions. The various characteristics of the dyad can serve as instruments for measurement of the relationship itself, but more than that its relationship to other social system forms. The hypotheses set forth possible means for research into this group form which pervades our social system.

THE CONSTRUCTION OF SCALES FOR THE MEASUREMENT OF MIGRATION AFTER RETIREMENT

Ernest W. Burgess, G. Calvin Hoyt, and Charles R. Manley

Older persons are the most immobile age group in the population. Traditionally, in the United States, they tend to remain in the home of their middle years or, if they move, to live with their children or be limited to change of residence within and adjacent to their home community. Typical also is the movement of retired couples from the farm to the nearest town or small city.

Mobility in this country, however, is on the increase. Even the later age groups are being affected. This increase in movement is due to two main factors. The first is the rapid development of the two new types of transportation, the automobile and the airplane. The second is the increase in economic security of older couples and individuals.

In the past older persons were bound to their place of residence by

powerful factors of habit, sentiment, and economics. They still are more sedentary than persons of younger ages, but the factors restraining their migration are weakening. The economic necessity which compelled the great majority of older people to remain in their home community after retirement no longer exerts its full force. Social security payments under Old Age and Survivors Insurance and the expanding number of pension programs by employers are giving older persons an assured even if a modest and sometimes meager income after retirement. No longer is place of residence a matter of necessity, such as living with children or remaining in the home of one's middle years. It is becoming more and more a matter of choice.

The migration of older couples and individuals after retirement seems to be in large part directed to favorable climatic locations such as Southern California, the Southwestern states, and especially to peninsular Florida.[1]

In a study of a mobile home community in Florida, the male residents were rated on the motivations which led to their decision to migrate. Of the 1093 dwelling units in the community, a selection was made which yielded complete information from 184 men upon the factors which were important in their decision to migrate.[2] Actually, the migration to their trailer park community is partial. Only 12 per cent of the group is in residence 10 months or more each year (median annual residence is six months). The trailer community, however, is the only home of 31 per cent of the couples and individuals in the group.

The Rating Scale Employed. Each respondent was rated on a five-point scale for seven possible motivations for migration. The definitions of the scale values from 0 through 4 for each of the seven factors are as follows:

Climate — 4 very much a reason
3 much
2 some
1 a little
0 not at all

Health — 4 doctor's orders to migrate
3 doctor's recommendation to migrate
2 less serious condition improvable by migrating
1 believed general health would be better
0 not at all a reason for migration

[1] *See* T. Lynn Smith, The distribution and movements of the aged population, *Journal of Business,* April 1954, pp. 108-18.

[2] For description of sampling procedure and characteristics of the group studied, *see* G. Calvin Hoyt, "Attitudes Toward Mobile Living in a Retired Community", *American Journal of Sociology,* 59, January 1954, pp. 361-70.

Economics — 4 economically able to choose residence anywhere
3 had considerable freedom to choose residence
2 had some freedom to choose residence
1 little freedom of choice
0 unable to choose residence

Mobility — 4 traveled over United States (including Florida)
3 traveled considerably (including Florida)
2 moderate travel (including Florida)
1 some travel
0 little or no travel

Activities — 4 attraction of a vital activity
3 attraction of a prized activity
2 belief in greater general activity
1 belief in somewhat more activity
0 not at all

Relatives — 4 son or daughter or parent(s) in Florida
3 sister or brother
2 other close relative (uncle, nephew, etc.)
1 cousin or other relatives
0 none

Friends — 4 had close friends (or made close friends on visit)
3 had friends
2 had acquaintances
1 knew slightly one or more persons in Florida
0 none

(An eighth possible motivation, status, was subsequently omitted from the treatment owing to the difficulty of objectively determining its role.) Objective questions throughout the interview made it possible to rate each person on the scale for each factor. At one point in the interview each person was also asked directly which of the following motivations were important in his decision to migrate to Florida: health, climate, relatives, friends, costs, activities, or other (travel was usually volunteered under "other", and such items as "get away for a vacation" or "curiosity" were regarded as appropriate to the travel, or mobility, factor). This question, with informal probing, provided the basis for a further rating for each person (and each motivation) according to the *intensity* with which any factor of a given scale value might operate. For example, a person might have only a distant cousin in Florida, giving him a scale value of only 1 on the degree to which this motivation was present, yet this factor might have been very important (of high intensity) in his decision to migrate. Conversely, a close relative in Florida may have been of low intensity in the decision to migrate. Ac-

cordingly, then, each person was assigned two scale ratings for each of the seven factors affecting migration. The scale values of intensity are defined as follows for each of the factors:

4 very high intensity
3 high intensity
2 moderate intensity
1 low intensity
0 little or no intensity

In spite of the attempt to probe thoroughly for the relative intensity of each motivation a certain amount of subjective evaluation on the part of the interviewer was inevitable in some cases in the assignment of scale values of intensity. This was particularly true in the case of the economic factor, where the intensity might vary from 0 through 4 either positively or negatively. When a person (possibly of low retirement income) reported that *lower costs* in Florida were important in determining his migration, it is fairly obvious that his scale value on the intensity dimension is rather easy to ascertain. However, when a person (possibly of higher economic status) does *not* report lower living costs as a factor of importance, then the task of finding out the degree to which economic status operated with positive intensity (permitting travel) is difficult to accomplish and involves subjective evaluation by the interviewer.

In some cases the distinction between the presence and weight of a motivation itself is easily distinguished from the intensity of its operation, but for other factors the distinction is less well marked. For example, it is clear that relatives may have a high scale value as to presence while the operation of this motivation for a particular case may well give a low value on the intensity scale. With respect to climate, however, it is difficult to differentiate the presence or absence of climate as a factor from the intensity of its operation. In short, in dealing with the factor of climate, presence of this motivation is virtually synonymous with its intensity, while this is not true of other factors.

On certain motivations, such as health, the presence or absence of the factor as well as its operation differed for husband and wife. In this report the higher scale values were used where such differences as this occurred. (For example, if the husband was rated 1 and 2 on the two scales for health, his wife was rated 2 and 3 on the same factor, then the latter two values were used.)

Results of Presence and Intensity of Motivation for 142 Retired Men

For each factor, the left-hand column of Table 1 gives the mean score for the 142 retired men. The right-hand column gives the same information on the intensity scale ratings.

TABLE 1

Mean Scale Value for the Presence and Intensity of Seven Motivations for Migration to Florida

Motivations	Mean Scale Values	
	Presence	Intensity
Climate	3.51	3.25
Economics	2.26	— .38*
Mobility	1.99	1.77
Activities	1.63	1.71
Friends	1.63	1.17
Health	1.26	1.60
Relatives	.60	.54

* The economic factor appears lowest in intensity in Table 1 because positive score values are subtracted from negative score values.

Judging by the mean scale value of each motivation, climate is the chief factor in migration followed by economic ability and experience of previous travel in this country, including Florida. Activities and friends, which tie for fourth place, appear to be intermediate in importance and health and relatives rank lowest. In general, the intensity of the operation of the factor follows the pattern of the presence of the factor, with climate first, economics second, and previous mobility third. Activities retain its intermediate position and health takes fifth place in ranking in intensity. Friends and relatives average lowest.

Analysis of Differences in Mean Scale Value of Motivations by Retired Status

The mean scale value of the health factor for these 142 persons completely retired was compared with the mean scale value of the health factor for the 42 quasi-retired (those who regarded themselves as still gainfully employed as farmers or in own business), and so forth through all seven factors. Applying statistical analysis of the significance of the difference between the mean scores of (1) presence and (2) intensity according to the retirement status of the person yielded largely negative results except in three comparisons.

While many differences between the groups are observable, in only three of the fourteen tested differences between means did statistically significant differences obtain. The intensity of climate as a factor was significantly more important for the quasi-retired than for the retired group.[1] Economic status was, as to be expected, significantly higher for the quasi-retired group, and while economic factors *permit* the quasi-retired to migrate or travel, the retired group migrates because of *lower costs of living* in the Florida mobile home community.[2]

Analysis by a Different Technique

In addition to the five-point scale just discussed the motivations reported in answer to the direct question and the importance of each were treated separately. The men interviewed were asked direct questions on the several factors and their role (as *first importance* in migration, *second importance, third importance,* and *not a factor*). The results are shown in Table 2.

TABLE 2

Relative Importance of Different Factors in Migration by First, Second, Third, None, and Total Score for 193 Men

Factor	Importance of Factor				
	First	Second	Third	None	Total Score
Climate	96	73	11	13	445
Health	50	12	10	121	184
Economic (Living costs)	12	16	20	145	88
Mobility (Travel)	17	14	5	155	84
Activities	4	22	27	140	83
Friends	4	15	36	90[1]	78
Relatives	5	4	23	148[2]	46
Get Away (Farm or rest)	5	7	4	177	33

[1] Includes 48 cases where the person had friends in Florida.

[2] Includes 13 cases where the person had relatives in Florida.

The total score shown in the table was computed by weighing the response to each factor. Score values were assigned as follows: 3 to those of first, 2 to those of second, 1 to those of third, and 0 to those of no importance. Looking at the total scores it is apparent that climate ranks first, health second, and relatives last. The other four motivations, economic,

[1] Means of 3.52 and 3.25; CR, .23, $p > .05$.

[2] Means of intensity or absence 3.21 and 2.26; CR, 6.6, $p > .001$. Means of intensity 3.0 and 2.0; CR, 4.0, $p > .001$.

mobility, activities, and friends are intermediate with no statistically significant differences between them.

In Table 3 the mean values for the presence and intensity of motivation of 142 retired persons and the total score of factors reported by all the 193 men interviewed are entered in rank order. It is evident that climate ranks first and relatives last on all the three measures of motivations making for migration. The chief difference is the higher place of health in its reported importance as compared with its low rating on the scales for presence and intensity. This finding brings into question the validity of the scale values on health. It will be recalled that doctor's orders to migrate was assigned a value of 4 and doctor's recommendation a value of 3. The scale should be revised to give doctor's recommendation or orders a value of 4 and other serious illness a value of 3.

TABLE 3

RANKING THE MEAN VALUES OF THE PRESENCE AND INTENSITY OF MOTIVATIONS FOR MIGRATION OF RETIRED PERSONS AND THE TOTAL SCORE OF FACTORS REPORTED BY THE 193 MEN INTERVIEWED

	Rank Order of Motivations		
Motivations	Presence	Intensity	Reported Importance
Climate	1	1	1
Economics	2	2	3
Mobility	3	3	4
Friends	4	6	6
Activities	5	4	5
Health	6	5	2
Relatives	7	7	7

CHECK OF FINDINGS BY A COMPARATIVE STUDY

It is proposed to check the validity of these findings in a study of the retired employees of a company by comparing the motivations of migrants and non-migrants. Scale measurements are yet to be obtained on motivations to migrate.

Information from the records of the company[1] is available to check the findings on two of the motivations, namely, economic ability to migrate and mobility. Three indices of economic status are positively associated with moving away from the home community: weekly income before retirement

[1] Charles R. Manley, "Determining Factors in the Migration of Retired Employees", *American Journal of Sociology*, 59, January 1954, pp. 324-31.

of $70 and over, monthly income from company's retirement benefits of $40 a month and over, and residence in suburb rather than within city limits before retirement.

Associated also with migration is the large number of residential moves since retirement (excluding of course the migrant's change of address).

Summary and Conclusion

This paper may be summarized as follows:

1. A five-point scale was constructed to measure seven motivations for migration: climate, health, economics, previous mobility, activities, friends, and relatives.

2. The mean scale value of each factor measured both the degree to which the motivation was present and its intensity, with climate ranking first, economics second, and friends and relatives last, with the others intermediate.

3. A comparison of the retired with the quasi-retired showed only three differences in motivation: a higher intensity of the climate factor and a higher degree and intensity of economic ability with the quasi-retired.

4. A second method of measuring motivations yielded general confirmation of the scale value procedure except for health, which ranked second only to climate instead of its lower place by the first method. This finding suggests the desirability of a revision of the scale values of health.

5. The influence of two motivations, namely, economics and mobility as factors in migration has been confirmed by the findings of a second study comparing migrant and non-migrant retired employees of a Northern company.

In conclusion, it should be stated that the present findings are tentative and preliminary. They demonstrate the importance of a five-point scale for measuring motivations in migration. But these findings need to be checked by interviews with a matched group of migrant and non-migrant retired employees. In this way it will be possible to indicate under what conditions these motivations operate to promote or to impede migration. The scales also make feasible a comparison of motivation for migration of the different age groups in the population.

THE TRANSPARENCY OF INTERPERSONAL CHOICE[1]

RENATO TAGIURI, NATHAN KOGAN, JEROME S. BRUNER

The organization of behavior within a group is necessarily dependent upon a certain level of knowledge by its members of their preferences for one another. Are the preferences of the members of a group for each other known to their companions? Does preference involve a distinctive kind of behavior that is visible to the other members of the group? What are some of the factors that determine the degree to which the sociometric choices of a particular member will be known? These are the questions with which this investigation is concerned.

The more usual approach to the problem of whether and to what degree the preferences of people in groups are known to each other is to study the accuracy of social perception (8). Here, rather than asking about the characteristics of the perceiver, we turn the problem around and ask about the characteristics of those whose preferences are to be perceived. In particular, our interest is in the *transparency* of people, the ease with which others can spot their preferences.

SUBJECTS AND PROCEDURE

Five groups of Navy enlisted personnel with 12, 12, 15, 16 and 22 men respectively were used as subjects (cf. Table 1). In each case the groups had been working and living together for at least two months on board ship as members of CIC teams.

The following group procedure was used. *First,* the subjects were requested to indicate those of the crew with whom they would like to spend a 72 hours liberty ("choices"). *Second,* they were asked to guess who would choose them as companions for a 72 hour liberty ("guesses"). Following these two questions, the members were instructed to underline the three persons they preferred most among their choices and guesses, or if they had made fewer than three choices (or guesses) to add enough names to bring the list up to three. Thus, the procedure made available data obtained under both free and fixed conditions. In the *third* question, the subjects were asked to put themselves in the other fellow's place and try to figure

[1] This work was done in the Laboratory of Social Relations, Harvard University. The project was sponsored by the United States Navy under ONR Contract No. N5ori-07646. This is one of a series of studies of interpersonal perception carried through as part of the development of a method—relational analysis—described fully elsewhere (1).

out which three men he would choose to go with him on liberty. The *fourth* question was of the same type as the third, but subjects were asked to identify individuals whom each of the other members would feel chosen by.[2]

A more detailed description of the procedure can be found elsewhere (1, 7, 9). The information provided here is sufficient, however, for a discussion of the issue in question.

The Transparency Score

Consider now how the transparency score of a subject is obtained. Recall that a subject S_i chooses three of the N-1 members and omits the rest. Similarly, another subject S_j is asked to make three choices on behalf of S_i. We can represent this as follows:

Member	1	2	3	4	5	6	7	8	9	10	11
S_i's choices	x			x		x					
S_j's choices for S_i				x		x					x

S_i chooses members 1, 4, and 6, and S_j thinks that S_i chooses members 4, 6, and 11. The transparency of S_i for S_j is measured in terms of the number of matches out of the 11 possible ones existing between S_i's allotments of choices and omissions and S_j's corresponding allotments on S_i's behalf. In the above example, the number of matches equals nine. Next, the scores of all the other members with respect to S_i are added to obtain what we have called the subject's (S_i) transparency score. Thus, a subject's maximum possible transparency is $(N-1)(N-1)$, in this case 121, and his minimum transparency equals $(N-1)(N-1-6)$ or 55.

The above considerations specify the range within which the transparency scores will fall. If, however, we are interested in whether an individual's transparency is above chance, we have to determine whether his score deviates from what it would be if the others were guessing blindly.[3] Since this is a case of the "matching problem", it is possible to compute the expected number of matches and its variance (5).

[2] In the present paper we shall not be concerned with data obtained from the fourth question.

[3] Several chance models are conceivable. The one we choose corresponds to the case where the members are regarded as automata allocating their selections at random. The assumptions inherent in the model are these. First, independence is assumed between the different choices made by any single individual, and between his choices and his guesses. Second, the choices and guesses of any subject are taken to be independent from those of any other subject. Finally, there is the restriction that a subject may not choose or guess the same other person more than once.

First, we obtain the extent to which, on the average, the choices of a member will be known by any other member of the group on the basis of chance performance. In the case where the number of choices permitted is three, the expression for this expected mean is

$$E = \frac{(3)^2 + (N-4)^2}{N-1}$$

Since a transparency score is based upon the judgments of each of the $N-1$ other members, we multiply the above expression for E by $N-1$ to obtain a member's expected transparency score. For the 12 man group, then, a member's expected transparency is $(N-1)E = 73$. E has a variance of

$$Var_E = \frac{1}{N-2}\left\{E(E+N-1) - \frac{2}{N-1}\left[(N-4)^3 + (3)^3\right]\right\}$$

Again, this must be multiplied by $N-1$ to obtain the expected variance of the mean transparency score based on chance expectancy. The resulting SD for the 12 man group is 4.6.

Comparison of Observed and Expected Transparency

Table 1 contains the basic transparency data for the five groups comprising a total of 77 subjects. In every group the mean observed transparency scores are significantly above chance expectancy. In addition, the great majority of *individual* transparency scores (75%) are more than 2 SD's above the expected mean. Just four out of the 77 subjects have trans-

TABLE 1
Data on Transparency of Choice

Group	N	Chance Expectancy Mean	Chance Expectancy S.D.	Mean Observed	Observed Distribution in SD Units Relative to Chance Expectancy: −2 and below	−2 to −1	−1 to 0	0 to +1	+1 to +2	+2 and above
H	22	333	5.28	368.3	1	0	0	0	3	18
B	16	153	4.97	177.0	0	0	0	2	1	13
F	14	130	4.73	146.8	0	1	0	1	2	11
S	12	73	4.58	85.5	0	0	1	1	2	8
M	12	73	4.58	86.2	0	1	0	0	3	8
	—				—	—	—	—	—	—
	77				1	2	1	4	11	58

parency scores below chance expectancy, and of these only one is significantly below chance.

That the distribution of transparency scores lies almost entirely two standard deviations above chance expectancy, however, does not imply that we are dealing with a narrow range of transparency scores. In the following section we investigate factors that determine individual differences in transparency.

Determinants of Transparency

We shall start by assuming that the extent to which a member's preferences are known to the rest of the group is a function of the cue qualities of his interpersonal behavior. Thus, excessive reserve or excessive friendliness on the part of a member may make it difficult for others to identify his choices. Similarly there may be cues provided by the behavior of others toward the member. It may, for example, be particularly difficult to identify the choices of a member who is not chosen by anyone. Finally some cues may emerge from the very nature of the interaction between the member and the others.

Reciprocation

Analysis discloses that the extent to which a member's choices are known depends upon the number of mutual relationships in which he is involved. There is a significant rank-order correlation between a member's transparency score and the number of his *fixed* choices that are reciprocated by a *fixed* choice (Table 2). When no distinction is made as to whether the *reciprocating* choice is free or mixed, the correlations are still positive but smaller in every case.

TABLE 2

Rank Order Correlation between Transparency and Number of Reciprocated Choices

Group	N	Reciprocation of fixed choices by fixed choices only	Reciprocation of fixed choices by both fixed and free choices
H	22	.58**	.47*
B	16	.59*	.34
F	15	.66**	.42
S	12	.84**	.64*
M	12	.65*	.57

* Significant at the .05 level.
** Significant at the .01 level.

What cannot be shown in terms of these correlations, however, is whether transparency is a function of the reciprocated relationship itself, or of the personality of the individual who tends to be found in mutual dyads. The transparency of a man's choices may well be a function of the type of person he is, rather than of the particular phenomenal saliency of his mutual relationships. If, however, the mutuality of the choice, rather than the style of the chooser were the source of cues revealing the object of the choice, then it should follow that, for any specific individual, his reciprocated choices should be consistently more transparent than his unreciprocated choices.

To inquire into this matter, those individuals who were involved in both reciprocated and non-reciprocated relationships were subjected to further analysis. The frequency with which members recognized the subject's reciprocated choices was compared with the frequency with which they recognized his unreciprocated choices. In order to give as clear an answer to this question as possible, *fixed* choices reciprocated by a *free* choice were not included in this analysis. Only members who had one or two reciprocated choices could be used, cases with no reciprocated choices or with three reciprocated choices clearly not lending themselves to this form of analysis. This left 34 cases in all—ten from group H, eleven from B, four from F, six from S and three from M (Table 1).

Transparency of reciprocated choices exceeds transparency of non-reciprocated choices made by the same individual, in all but three of the 34 cases. According to the Dixon and Mood sign test (5) these results are significant beyond the .01 level. Transparency is clearly a function of mutuality of choice when "personality" is held constant. This finding does not, of course, exclude the possibility of certain personal qualities influencing transparency, when mutuality is held constant. We shall turn to this question in a later section.

So far the analysis of transparency has been carried out exclusively on the data obtained under fixed conditions. This was done to make possible a stringent comparison with chance levels of transparency. While this form of analysis is in keeping with the instructions given to the subjects—to put themselves in the other fellow's shoes and guess which *three* men he would choose—the reader may well have wondered about the effect which other than fixed choices may have had upon transparency.

It will be recalled (cf. Table 2) that the correlation between transparency and reciprocation decreased for every group when choices could be reciprocated by either a fixed or a free choice, as compared to the case in

which reciprocation by fixed choices only was considered. We wondered whether this difference might be related to the fact that the fixed choices are the ones subjects declare to be their strongest (cf. instructions to subjects). Pairs made up of mutual fixed choices might involve a more intimate association between the members than mutual relationships composed of a fixed choice on the part of one member and a fourth, fifth, or nth choice on the part of the other. We speculated, then, that mutual relationships composed of high priority choices would provide more salient cues as to a member's preferences than would the less intense relationships. The lower correlation when reciprocation by either free or fixed choices is considered may, however, be due to the fact that under these conditions the range of reciprocated choices is narrower. For, while members cannot have more than three reciprocated fixed choices, inclusion of free choices boosts the number of reciprocations of members who had fewer than three.

Fortunately we are in a position to test the relative contribution to transparency of free and fixed reciprocating choices. Table 3 shows the mean transparency of members who have zero, one, two, and three choices reciprocated by fixed choices (cf. over-all means). Each level of fixed reciprocation is further differentiated according to how many among a member's fixed choices are reciprocated by a free choice. By reading down each column it can be seen that additional reciprocations by *free* choices do not raise transparency. It is clear, then, that a fixed choice reciprocated by a free choice does not provide as perceptible a cue about whom a subject is choosing as does a fixed choice reciprocated by another fixed choice. This is a rather important finding, because it indicates that the first few choices (which in our case happen to be the fixed choices) correspond most closely to distinguishable behavior.

While we find that a subject's transparency is not materially affected as a result of reciprocation by free choices, we cannot maintain that reciprocations involving free choices have no effect whatsoever upon transparency, until we examine the influence exerted by the reciprocation of a member's own free choices. If free choices play any role in transparency, we should find that reciprocations occurring outside a subject's three fixed choices have the effect of misleading observers as to the identity of his three fixed choices, thereby lowering the transparency of that subject. The larger the number of such extra reciprocations, the greater should be the amount of interfering cues. Our hypothesis, then, is that if the manifestations of free choices are perceptible, there will be an inverse relationship between transparency and such extra reciprocations. This hypothesis can be tested by com-

puting the correlation between these two variables *within* the cells of Table 3, thus holding constant both the number of fixed choices reciprocated by *fixed* choices and the number of fixed choices reciprocated by *free* choices. The rank order coefficients vary from .76 to —.36, with an approximate

TABLE 3

TRANSPARENCY AS A FUNCTION OF FIXED CHOICES RECIPROCATED BY FIXED AND FREE CHOICES, AND OF RECIPROCATED FREE CHOICES

Number of fixed choices reciprocated by a free choice	Fixed choices reciprocated by a fixed choice			
	0	1	2	3
0	32.3 .76* 6†	47.0 —.19 8	59.0 —.36 10	75.6 .10 9
1	20.6 .02 9	47.6 —.01 16	62.0 .43 6	
2	21.0 .40 6	45.0 .31 7		
3	—— 0			
Over-all means	24.0	46.8	60.1	75.6
Frequency	21	31	16	9

Note.—This table is based on percentile rank scores. The raw transparency scores of members are a function of group size. In order to make members of groups of various sizes comparable, these raw transparency scores were converted into percentile rank units. This involves a rank-ordering of the raw transparency scores of members, and dividing the member's rank by N. If this value is subtracted from 100, high percentile rank scores refer to high transparency.

* Correlation (rho) between extra reciprocations and transparency.

† Cell frequency.

average of .16. Clearly, then, there is no evidence in favor of an inverse relationship between the transparency of a subject and his number of extra reciprocations. As a result, we feel quite confident in claiming that given our procedure, reciprocations containing free choices have a negligible influence on a subject's transparency.

Two sets of circumstances could bring about such a series of findings. It is possible that people do not manifest overtly their choices beyond a range of two or three. It is also possible that if they do manifest overtly their fourth, fifth, etc. choices, observers do not "pick them up". To operate effectively in a group an individual may only need to be aware of the two or three strongest preferences of each other member.

Effect of Personal Factors upon Transparency

We have shown that reciprocation is a very important determinant of the extent to which a member's preferences for another are known to the rest of the group. Does this finding imply that none of the other variables tapped by our procedure are related to transparency? Four of the accessible dimensions are of particular relevance. They can be regarded as operational definitions of a person's expansiveness, self-confidence in being accepted by others in the group, popularity, and responsiveness.

Expansiveness is defined by the number of members chosen by a subject (4). *Self-confidence* is given by the number of choices a subject estimates he will receive. *Popularity* is equated to the number of choices a member actually receives. Finally, *responsiveness* is measured in terms of the number of members who feel chosen by the subject. When the subject population is stratified in terms of mutual fixed choices (zero, one, two, or three) a complex relationship is observed between each of these variables and transparency.

Consider first those individuals whose three fixed choices are reciprocated by others—specifically those with two or three choices reciprocated. We find that for such individuals, there is an inverted U-shaped relationship between the four measures mentioned and transparency. That is to say, those subjects moderate in expansiveness or in self-confidence or in popularity or in responsiveness are *more* transparent than those who are either high or low in these respects. While choices, guesses, choices received and guesses received "on paper" do not necessarily correspond one to one to perceptible overtures toward specific persons, they must bear some relationship to the number of individuals with whom a member appears to be associated. When this number is "low", the cues revealing the identity of the three fixed choices are insufficient, when "high" the observer may have too many alternatives from which to identify the member's three choices, and therefore is likely to make errors. On the other hand, when expansiveness, etc. are of such value that they correspond most closely to three associations, the observer has the easiest task.

For people *none* of whose choices are reciprocated the data do not follow the curvilinear trend, but transparency increases with the four variables. At the level of zero mutuality, we are dealing largely with isolates whose choices, unlike those of members involved in mutual relationships, would have to be identified primarily in terms of their own behavior. Here, high levels of expansiveness and self-confidence may even help the observer to identify the subgroup of members in whom the subject is interested. This reduces the difficulty of the task by limiting the number of persons he might choose. Still, at zero mutuality, transparency is lower than at any other level. The cues attendant to mutuality seem much more informative than those accompanying high expansiveness and high confidence. When mutuality is equal to *one,* no consistent trends are observed. This result falls between the results that obtain for mutuality levels of two and three, on the one hand, and zero on the other.[4]

Discussion

The evidence presented in this paper shows that the affective preferences of 75 per cent of the members of a group are known to the others in excess of chance expectancy. The fact that transparency is above chance implies that the subjects were more accurate in perceiving others' choices than random automata would be. Better than chance transparency also implies that *each* of the following three conditions must be fulfilled. First, choices must have observable manifestations. Second, the instructions used must be adequate to "tune" subjects to attend to these manifestations. Third, "guessing" whom another member chooses cannot be an act of guessing at all, but is a true discrimination. Had we obtained negative results, we would not have known which of these three components contributed to such an outcome.

[4] Leavitt, Stone, and Gage have investigated correlates of the transparency of pupils' sociometric choices as seen by their teachers. They asked 103 teachers of fourth-, fifth-, and sixth-grade pupils to predict which two members of the class each pupil would choose when given the following instructions: "Suppose that your class were to be divided into two groups with different teachers in different rooms. Write the names of the five pupils you would most like to have in the same group with you". Each child received a transparency score of 0, 1, or 2, according to whether his teacher correctly predicted 0, 1, or 2 of his five choices. Transparency was found to be significantly greater among (a) pupils considered easiest-to-work-with by the teacher, (b) female pupils, (c) pupils higher in socioeconomic status, (d) more popular pupils, and (e) pupils perceived by the teacher as more popular. Transparency was not significantly related to the pupil's favorability toward the teacher nor to the pupil's transparency of responses on a forced-choice problem check-list. (Personal communication to the authors.)

It was also shown that reciprocation is an important determinant of the transparency of a choice. Different choices made by the same member differ in transparency, and his reciprocated choices are more transparent than his non-reciprocated ones. This can be taken to mean that when we consider a member's preferences for other group members, we utilize his behavior toward others as well as others' behavior toward him. If one develops an hypothesis that a given member likes another member on the basis of the first member's behavioral manifestations of choice, that hypothesis is further confirmed by the second member manifesting reciprocation. *It is the interaction between two persons that is evaluated.*

The correlation between reciprocation and transparency hovers somewhat over .6. Reciprocation, therefore, can account for only part of the variance in transparency. Factors other than mutuality affect transparency. Indeed it was shown that with mutuality held constant systematic relationships were found to hold between transparency and four measures of individual difference—i.e., expansiveness, self-confidence, popularity and responsiveness. Thus we inferred that each of these measures also must be related to manifestations that have cue value in revealing a member's preferences.

The fact that group members can be arranged in order of transparency suggests that it may be possible to refine the analysis of studies of accuracy of interpersonal perception by specifying more exactly the difficulty of the perceptual task for the various members of the group. Clearly, the most transparent subject is left to judge a set of less transparent persons. He has the most difficult task in the group. The opposite holds for the least transparent member. In the present study for example, the event to be judged is such that the most popular members are the most transparent. Transparency correlates highly (better than .5) with popularity, a relation mediated by the fact that the popular members' choices are most often reciprocated. So in this case the less popular members have the relatively easier judgments to make and vice versa. It is possible, however, that when the event to be judged is different from the one in this study, other sets of members may be the most transparent.

These considerations may have to be taken into account not only in studies of perception of interpersonal feelings—as illustrated by some of the writers' work (8)—but in any investigation of interpersonal perception where the subjects serve both as judges and as stimulus objects. It is possible that these circumstances may well play a role in some of the investigations such as the well known study by Chowdhry and Newcomb (2), comparing the

relative ability of leaders and non-leaders to estimate opinions of members of their own groups.

As we have indicated, results obtained in such studies may be related to factors other than *ability* in judging social events, and the inconsistency of results obtained from investigations (e.g., 3, 6) similar to Chowdhry and Newcomb's may be due to factors such as we have described.

Summary

The present paper examines the problem of transparency, i.e., the extent to which a subject's preferences are known to the other members of a group. We first compared subjects' transparency scores to the level of transparency that would be expected if members judged a subject's choices on a random guessing basis. Approximately seventy-five per cent of the subjects in a group have transparency scores significantly in excess of chance expectancy. The mean observed transparency scores are also significantly above chance in each group.

Next, we explored factors responsible for individual differences in transparency. The most striking relationship discovered was that reciprocated choices are far more transparent than those not reciprocated. Significant rank-order correlations were obtained between a member's transparency score and the extent to which his fixed choices are reciprocated by a fixed choice. It was further shown that the transparency of the reciprocated choices of a member significantly exceeds the transparency of the unreciprocated choices made by that same member. The finding clearly indicates that transparency is predominantly a function of mutuality of choice rather than of personal characteristics of the member involved in reciprocal relationships.

In addition we found that reciprocation by a free choice contributed far less to the recognizability of choice than did reciprocation by a fixed choice.

We next asked whether transparency is related to personal dimensions when the mutuality level is held constant. Expansiveness, self-confidence, popularity, and responsiveness bear a relationship to transparency that depends upon the mutuality level. When the level of mutuality is high (two or three), an inverted U-shaped function is obtained. Transparency achieves maximum values when expansiveness, self-confidence, popularity, and warmth are in the middle range. When the subject has no reciprocated choices, on the other hand, high expansiveness and self-confidence are associated with relatively higher transparency scores. The inverted U-trend does not occur.

The greater transparency of the reciprocated choices may be understood if we consider reciprocity as providing the perceiver with a double source of choice cues, i.e., the manifestations of the member whose choice is to be identified, and the manifestations of choice on the part of the reciprocating member. While transparency has been shown to be in large part a dyadic phenomenon, we found that personality factors do play a role in transparency over and above the effect of reciprocation.

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PART V

SOCIOMETRIC MEASUREMENT

SOCIOMETRIC MEASUREMENT: SOME PRACTICAL ADVANTAGES AND NEW DEVELOPMENTS[1]

JOAN H. CRISWELL

The sociometric approach, well known in theoretical investigations, has also from the beginning had a strong slant toward application to practical problems. Its earliest development by Moreno (13) was intended as a means of rearranging groups of school children in such a way that they could study together with less friction and more mutual assistance. It has continued to find particular growth in training and psychotherapy. Because of its relevance to field situations, it has had an earthy realism, adapting remarkably well to the social facts of life; it quantifies the structure of social behavior without distorting it or closing off other pathways of experimental approach.

The approach, in fact, seems tailormade to conform to the essential characteristics which have been ascribed by various experimenters to the group. It is well suited to the definition of a group as two or more persons sharing an activity directed toward a common goal. It is particularly relevant to the definition of a group as an instrument for satisfying certain needs of its members. The use of a specific criterion of choice also takes account of the fact that different group activities generate different systems of interlocking roles and members see each other from the perspective of roles mutually played.

Thus, perhaps earlier than other techniques of psychological measurement, sociometry has recognized that personality characteristics are functions of interpersonal relations and that they cannot be measured satisfactorily without specification of the group goal and membership composition. It is recognized that each member is in a sense a projective test for other members. He is measured as his behavior impinges on them and meets their needs. His characteristics are established partly through the response of all other group members and no one person, however insightful or centrally placed, can be expected to give an adequate index of this individual's behavior.

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[1] Paper read at the annual meeting of the American Psychological Association, September 7, 1955. The opinions and assertions in this paper are those of the writer and are not to be construed as official or reflecting the views of the Department of the Navy or the naval service at large.

An additional realistic element is the use of choices rather than of descriptive statements as the source of data on the person. The group member does not rate others in the conventional manner but expresses his preference for them as potential associates in some common activity such as study or team play. Judgments thus are not made in a vacuum but are action-oriented, related to the goals to which they are relevant.

The sociometric chart of the network of interpersonal relations is not, of course, the final word on the group structure. A failure to realize this has sometimes caused criticism of such findings. The chart is best viewed as the beginning of a research, not the end. But it is a logical beginning in that it departs as little as possible from the behavior under study. Since the raw data of social behavior do consist of interpersonal relations, it would seem that more elaborate and sophisticated measures of the person "as he sees himself" or "as he really is" should build on these interpersonal relations as a framework.

Another aspect of sociometry's realistic approach is its recognition of the creative aspect of behavior. Human responses are seen as a continual process of problem solving characterized in varying degrees by what Moreno has called "spontaneity". Each life situation becomes an opportunity to create or recreate a role and, to do so, the individual draws on the "repertoire" of knowledges and skills which he has accumulated during his life history. The psychologist attempts to predict the nature of this repertoire: its size, range, content, and availability to consciousness, but not the exact use that will be made of it. The psychologist who believes in furthering creativity tries in certain areas to work himself out of a job by making human behavior less predictable and controllable rather than more so. Applied sociometric technique adjusts to this situation by predicting not what the individual will do but how well what he does will be accepted. It tries to set up conditions conducive to growth in spontaneity. For example, it hypothesizes that an individual is better accepted when he facilitates others in playing certain roles and that groups can be rearranged in such a way that facilitation of spontaneity in role playing is maximized. The pure experimentalist may say, "Spontaneity exists, but I, as a scientist, must proceed as if it did not". Sociometry says, "Spontaneity must be recognized because, if it is not, it may be reduced by facilitation of less spontaneous and more predictable responses".

I have said that the sociometric technique offers a realistic action-oriented framework from which more elaborate measures of personailty and group interaction can take off. But it is in this area that one of the pitfalls

of the technique exists, since too often its yield of directly significant results lulls the experimenter into thinking that he has finished his work and can assume all sorts of unproved facts auxiliary to the obtained data. The "common sense" appearance of the findings invites use of rule-of-thumb opinions in place of further scientific measurement. Such common conclusions are, for example, the assumption that highly chosen persons are always leaders, that high reciprocation in a group necessarily means lack of friction, and that number of choices received is perfectly correlated with social adjustment.

Since such assumptions cannot be made, considerable research is necessary to illuminate sociometric findings by analyzing the bases on which choices are made. We are aware now that simply asking people why they choose other people is helpful but insufficient. Most replies are merely restatements of the fact that a state of like or dislike exists. The more specific answers are extremely difficult to classify or interpret. To a considerable extent they may merely reflect cultural stereotypes of friendship bases such as "honest", "neat", "clean-cut", etc. Some attempts are being made therefore to obtain data on factors which we have reason to believe are among the major determinants of choice. To illustrate what is being done I will refer to work underway on Office of Naval Research contracts, some of it yet to be published.

As mentioned previously behavior from the sociometric point of view can be characterized as a continual process of problem solving in which individual members interact for the purpose of performing the group task as it appears to them in the larger framework of their lives. Each person, according to his life history and natural limitations, has a different view of the action requirements of the task and the opportunities it offers for satisfaction of his needs through the duties to be performed and the interpersonal relations to be developed. Thus the sociometric choice structure relates to three large areas of social behavior: social perception, motivation, and action.

Each individual, if only because of his unique position in the group, must see its structure differently. A complete measure of group structure can then be conceptualized as some combination of the group views of the individuals. To approach this task Tagiuri at Harvard is developing his "relational analysis" in which he asks each individual not only to make choices and rejections but also to name those whom he thinks will choose him, and those persons whom other persons in the group will choose (16). Numerous different views of the group structure emerge, on the basis of

each individual's choices, his feeling of his pattern of acceptance, and his perception of other persons' interpersonal relations. One score which Tagiuri at present believes to be promising for the prediction of group behavior is a person's "social transparency", that is, the accuracy with which other persons can perceive his choices and rejections. Although chiefly related to number of mutual relationships established, social transparency also has relationships with expansiveness, self-confidence, popularity, and responsiveness (17).

Sociometric measures have often failed to distinguish between the elements in choice which are contributed by the official requirements of the communication network, the individual's adaptation to these requirements, and the way he would like to adapt to the requirements. For example, if a worker is asked whom he contacts during his workday, he will report communications which are to an unknown degree a function of what he definitely has to do, how he is permitted to vary from prescribed procedures, and what deviations he can get away with. A start toward disentangling these influences has been made by Tannenbaum and his staff at the University of California, Los Angeles (12). They obtain from each worker for each work activity the names of the individuals with whom he is supposed to deal, those with whom he actually deals, those with whom he would like most to deal, and those with whom he would like least to deal. This method, called the multi-relational sociometric survey, provides a basis for comparison of the sociometric structure as perceived, actual, desired, and rejected. A further comparison can be made with the prescribed structure derived from the official rules of the organization. Currently scores are expressed as per cents of the total number of relationships possible, e.g., per cent of prescribed communications perceived, per cent of actual relations rejected, etc. The method is proving useful in analyzing elements involved in morale and productivity. A sample finding is that restrictive leadership in a research laboratory produced higher conformity of actual to prescribed behavior but less conformity of actual to desired behavior. Further work is being done to relate role discrepancies to morale and productivity.

Obviously the above approaches pose difficult mathematical problems of derivation of the most meaningful scoring procedures, particularly the development of pattern scores expressing the deviation of one structure from another or the development of measures which combine different structures. Tagiuri is currently working with mathematicians on some of these problems. One index of likeness between different sociometric structures has already been contributed by Leo Katz who is also at work on sociometric mathematical treatments (9).

The individual's choice of others is based not only on his perception of communication requirements and social acceptance but on the power of other individuals to satisfy his basic motivations as they relate to the group situation. Each group can be thought of as a potential satisfier not only of needs directly related to the task at hand but also of private needs not contributing directly to task accomplishment but requiring satisfaction if the work is to be done. This problem is especially prominent in groups like those of the Armed Forces in which the members live together and therefore generate needs related to both task and leisure time activities. Jennings has made a useful distinction between "socio-group" activities in which the criterion of choice is a "collective" one imposing a work task on the group, and the "psyche-group" in which the criterion is "private", relating to the use of leisure time (6, 7). Under the psyche-group criterion group structure is informal and mutual roles may be developed which solve personal emotional conflicts and therefore have a therapeutic character. Jennings points out that, particularly in groups living together, a good psyche-group life is necessary as a substrate for the socio-group activity.

Sociometric measurement of needs in groups living together is being carried on at Syracuse University by Gardner and Thompson who are effecting a tie-up between Murray need theory and sociometry (4, 5). The groups used are members of fraternity houses which may under different criteria be structured in a socio-or psyche-group manner. Four of the Murray needs have been chosen: n achievement-recognition, n affiliation, n succorance, and n playmirth. In each case the sociometric question is asked in terms of the need. For example, for n affiliation the stage is set by saying, "Let us suppose that among your acquaintances there are people with whom you like to maintain a loyal friendship. You may be uncertain as to why you are attracted to such persons, but you know that being in their company on almost any occasion tends to give you a good feeling". Each member then ranks all his fraternity brothers according to their satisfaction of the need. He also rates himself as he thinks he satisfies the need for the average brother in his house. Numerous scores are in process of development by Gardner and Thompson, expressing such things as the efficiency of the group in reducing different needs and the presence of similar need patterns in members choosing each other.

The need reducing property of the group is also involved in Fiedler's work on selection of leaders of small work units (2, 3). Fiedler has developed for the prediction of effective leadership by sociometrically accepted leaders, a test of the perception of what he calls "assumed similarity". He

finds that a leader tends to develop a more productive group to the extent that he sees his followers as personally different from each other, regardless of whether this difference accords with self perceptions or other measures of these individuals. In other words, the accepted and effective leader shows low assumed similarity. It appears plausible that this perception of difference is an expression of a leader's task-oriented or socio-group-oriented attitudes, since low perception of difference seems to be associated with choice on a leisure time criterion basis. Fiedler finds that some leaders can be effective with higher assumed similarity but only if they operate through keymen toward whom they are emotionally distant.

The problem of need measurement leads us into the general area of the scoring methods to be applied to sociometric data. It has long been recognized, for example, that an aspect of sociometric measurement requiring better definition is the frame of reference in which the group is seen by the chooser. A sociometric measure of group status is quite explicitly relative to a certain group and task. The question then arises as to the absolute frame of reference. Is a person who has high status in one group comparable to a person who has equally high status in a different group? This problem is not a purely mathematical one, as I have pointed out (1). The question is: Is the most chosen individual in Group A really as much preferred by his companions as is the most chosen individual in Group B? Or is he much less well liked, since A is a low-morale group in which no one cares much for anyone else, while B is an enthusiastic, congenial group?

Gardner and Thompson are also working on this problem, using an adaptation of a man-to-man rating scale (4, 5). In their description, "The respondent is asked to think about all the members of some large population such as 'All the males you have ever known'. He is shown a pictogram of a normal probability curve made up of stick figures representing 'All males ever known'. The characteristics of this function are then explained to the respondent in simple terms". After being given a description of the need criterion, the respondent names and locates on the scale provided the man who at any time in his life best met this need. Similarly he locates the worst man. A point halfway between the high and low man is similarly defined and two other points are located bisecting the scale halves already defined. Each member of the group under study is then located on this five-point reference scale. When the rater is through, he has ranked his fraternity brothers according to their position in the population of all the men he has known. Smaller reference populations can also be used. A subpopulation reference group which Gardner and Thompson are experimenting with is

"all fraternity men you have ever known". This method of measuring the frame of reference, originally individually administered, is being adapted for group administration.

Another scoring problem concerns the possible predictive usefulness of choices received not only by the individual himself but by those who choose him. Possibly it is better to receive two choices from individuals who are themselves well chosen than to receive six choices from isolates. One solution to this problem is a scoring method recently completed by Leo Katz (8) in which an individual's status measure takes into account not only the number of choices he receives but also the choice status of each individual who chooses him, the status of each who chooses these in turn, etc. This status measure is rather complex though not difficult to compute. It would be interesting to see it tested out in practice.

Very difficult mathematical problems center around the probability distributions of various sociometric variables. Yet these distributions should be known, if results are to be properly tested for statistical significance. Due to the small N of groups used, distributions must be exactly known. For example, although the chance distribution of mutual choices is known to approximate to the Poisson distribution when N is large, its distribution for small N still resists derivation. The mean of this distribution was established some years ago by Lazarsfeld (14). But only recently did Leo Katz and Thurlow Wilson independently develop the corresponding variance (11). The distribution form itself seems to be almost in a class with squaring the circle. But Katz is still at work on at least an empirical approximation to it.

The most difficult and least developed area of applied sociometric research is the study of the actions implementing social choice, the role facilitation which is hypothesized to result from group rearrangement. Sociometry has been widely used in applied research in the military and educational fields to aid in assessment of the individual's social aptitudes and group adjustment. But it is perhaps ironic that, although the test was originally developed with the aim of improving group functioning by rearrangement and although this assumption underlies sociometric practices in education, this is an aspect of sociometry which has received little precise experimental evaluation. It is possible that this application has had to await better development of methods of measuring group interaction and productivity.

The place at which I would like to see sociometry applied more is in analyzing the process of group problem solving, since theory says that creative thought in a group can be increased by putting together individuals

who feel that they facilitate each other in playing their respective roles. Sociometrists have, of course, never believed in slavishly following the dictates of interpersonal choice expressions, because some choices relate to inappropriate private need responses. The question is whether a judicious implementation of choices will improve the initiative and originality of a problem solving group, especially a group which must maintain its motivation and productivity over a considerable length of time. The most important thing to learn at this point seems to me to be whether there are identifiable features of problem solving interaction which are traceable to congeniality of role behavior and interpersonal attraction.

Compatible and incompatible groups are currently being studied by Thelen at the University of Chicago (18) and by Schutz at Harvard (15). Both investigators have developed tests for predicting an individual's characteristic type of group interaction. Compatible and incompatible groups are constructed according to whether members' role behavior is predicted to be mutually facilitating or conflicting. The process of adjustment and success of functioning is then studied over several sessions. Sociometric choice as a basis of assignment or reassignment can be included in such studies. At present Schutz has obtained interesting data by asking for sociometric choice after intermediate and final problem solving sessions. He has found that individuals having the same orientation toward group activity prove compatible, operate more efficiently together, and also prefer each other sociometrically.

In summary, my purpose has been to call attention to practical aspects of sociometric procedures and to some new research contributions intended to increase the usefulness of sociometry. It is my hope that better group assessment and interaction can be achieved through the use of these measures of social transparency, role discrepancy, assumed similarity, need satisfaction, social status, and compatibility. At the same time the testing of these measures in field situations can be expected to provide feedback leading to improved theoretical formulations.

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RECENT DEVELOPMENTS IN LATENT STRUCTURE ANALYSIS

PAUL F. LAZARSFELD

The main mathematical formulations of latent structure analysis were included as chapters 10 and 11 in the fourth volume of *The American Soldier* series called "Measurement and Prediction". (This will subsequently be referred to as "first statement".) For the mathematically untrained reader this was rather hard going and so an elementary introduction was offered in a paper called "Conceptual Foundations of Latent Structure Analysis" (hereafter called "conceptual foundations") and included in a symposium

on *Mathematical Thinking in the Social Sciences* (Free Press, Glencoe, Illinois). There is now in preparation, under the sponsorship of the Rand Corporation, a comprehensive text on the whole topic. It will, however, take some time before this text is available and so it seems desirable to report briefly on some of the more recent developments. It is the purpose of the present paper to give pertinent examples without going into mathematical details.

Because the "conceptual foundations" gave an easily accessible introduction to the problem only a few preliminary remarks will be needed. Latent structure analysis is a mathematical formulation of what might be called the diagnostic process. In all the social sciences we want to classify people or collectives according to some underlying properties as, for example, friendliness, cohesion, etc. In order to do this, we use a variety of indicators. In the case of the friendliness of a person we might watch him in a variety of situations or analyze his replies to an attitude questionnaire. In the case of cohesion we might count the number of contacts between members of the group, the speed with which they solve collective problems, the happiness of the members, and so on. Whatever the main problem we always have the task of making inferences from a variety of manifest indicators as to the underlying or intended characterization of the object under investigation—its latent characteristics. The nature of the inferences from a large number of manifest indicators to a smaller number of latent properties is the main topic of latent structure analysis.

The Accounting Relations

A number of assumptions are being made in this approach. It is taken for granted that between the latent property and the manifest indicator there exists a probability relationship. Suppose we want to classify people according to how much they favor government action in economic affairs. Two rather convinced interventionists would still disagree on specific measures. One might consider nationalization of the banks more important and the other, nationalization of mines. To any degree of general interventionism there would correspond probabilities that a certain specific nationalization measure is approved.

The consequence of this assumption is that in a large series of observations all indicators will have statistical associations, either positive or negative, for people who approve of one kind of interference are also more likely to approve of another one. Obviously, if two variables are related to a third

one they will also be related to each other. But at the same time this association will be far from perfect. As a matter of fact, if we had to deal only with people who are alike in their basic attitudes, the various indicators would not be statistically related at all. Only because any actual group of respondents is a *mixture of people with different basic attitudes do we find the indicators* statistically related. To understand latent structure analysis, this point needs more careful analysis and further specification. We shall proceed first with the help of an artificial example.

Suppose we have a general measure of economic interventionism (Ei) and with its help we pick three groups of 36 people each. The three groups vary in regard to this measure but within each group the 36 people agree. Now take two specific topics like banks and mines. The responses of the people will be assumed to be as follows:

TABLE 1

THREE GROUPS OF PEOPLE CLASSIFIED BY DEGREE OF GENERAL ECONOMIC INTERVENTIONISM (Ei) AND BY ANSWERS TO THE SPECIFIC QUESTION OF WHETHER MINES AND/OR BANKS SHOULD BE NATIONALIZED

Ei Low

Banks \ Mines	Yes	No	
Yes	4	8	12
No	8	16	24
	12	24	36

Ei Middle

Banks \ Mines	Yes	No	
Yes	9	9	18
No	9	9	18
	18	18	36

Ei High

Banks \ Mines	Yes	No	
Yes	16	8	24
No	8	4	12
	24	12	36

Three observations are crucial in regard to Table 1. a) Both indicators (the specific question) increase in probability as the general level of Ei increases. b) Within each group the two indicators are not related. This one would expect, if it is only a matter of chance or special circumstances, that when faced with an alternative a person would approve the nationalization of banks rather than mines. c) But, of course, the proportion of people who approve both goes up with every degree of Ei.

Now let us inspect the three groups of people jointly by adding the three parts of Table 1, box by box. We get the following relation between the two indicators:

TABLE 2

THE RELATION IN THE APPROVAL OF BANK AND MINE NATIONALIZATION FOR ALL THE RESPONDENTS IN TABLE 1

		Mines: Yes	Mines: No	
Banks	Yes	29	25	54
	No	25	29	54
		54	54	108

For the total sample the two items are related although they were unrelated in the three subclasses. The final relation is not very strong. One would expect it to be stronger if each item were a "better" indicator, that is, if they were rather more sharply related to the underlying property of Ei. We can test this. Instead of letting the positive replies increase from 12 to 24, let us increase them from 6 to 30. Then the Table corresponding to Table 1 would be (without repeating all the annotations):

TABLE 3

THE SAME LAYOUT AS TABLE 1 BUT UNDER THE ASSUMPTION THAT THE TWO QUESTIONS ARE MORE STRONGLY RELATED TO THE GENERAL ATTITUDE OF Ei

1	5	6
5	25	30
6	30	36

9	9	18
9	9	18
18	18	36

25	5	30
5	1	6
30	6	36

Now if we add the three parts of Table 3, box by box, we get indeed a stronger relation between the two questions.

TABLE 4

THE RELATION IN THE APPROVAL OF BANK AND MINE NATIONALIZATION FOR ALL THE RESPONDENTS IN TABLE 3

		Mines: Yes	Mines: No	
Banks	Yes	35	19	54
	No	19	35	54
		54	54	108

In latent structure analysis the probability relation between a manifest indicator and the latent property it helps to express, is called a *trace line,* or trace in the more general case where the latent property is multidimensional. The facts we have just exemplified can then be summarized as follows: *the statistical interrelation between manifest indicators is determined by their trace lines.* And one of the main tasks of latent structure analysis is the reverse of the process we have just gone through, that is, *to derive the trace lines for a set of indicators from the observed statistical interrelations between them.*

The Trace Lines of the Latent Content Scale

We shall take as an illustration a public relations study where an oil concern wishes to know the general public's attitude towards it. A series of questions were asked and four of them are selected here.

Question 1: Do the leaders of the oil companies take into account the interests of the general public as much as they should in the way they run their business?

Question 2: Are the oil companies involved in any international activities which are dangerous to the United States?

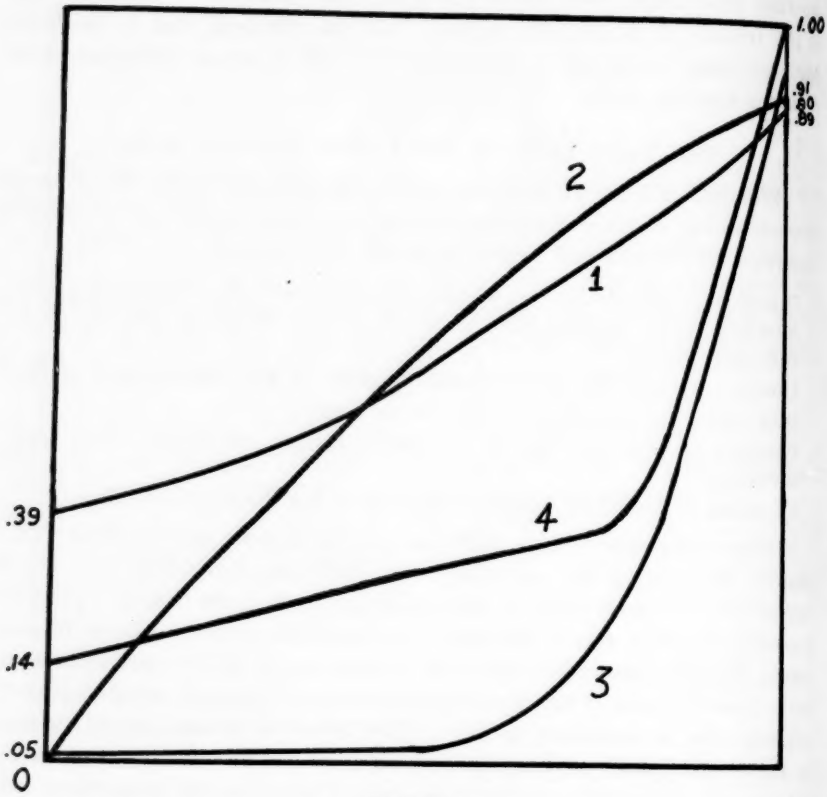
Question 3: Do the big oil companies control too much of the oil business?

Question 4: Is the oil industry wasteful of our natural resources?

Each respondent could check one of five answers ranging from firmly positive in favor of the oil industry to firmly negative. This gave us an opportunity to create items of varying leniency. For the first two questions a positive response was scored when the respondent gave any kind of friendly reply. For the second two questions a more strict requirement was set up for a positive reply. Only if a respondent scored the most extreme friendly attitude was he considered positive. The difference in cuts is well-reflected in the proportion of positive replies which, for the first two questions, were .54 and .55 respectively; in the second set of questions the proportions were .22 and .25 respectively. The more stringent items have clearly much less positive replies. It should be noticed that within each pair the proportion of positive responses is practically the same.

Now let us look at the trace lines. They are given in Graph 1. We notice first that the more lenient items have convex trace lines and the more stringent ones are concave. This is quite easily understood. For a lenient item it doesn't need much increase of general friendliness to lead to a positive response. On a stringent item, however, we have to move pretty

far on the general attitude axis before the probability of a positive response begins to rise. But, interestingly enough, within the two groups of items there are marked differences. Compare, for instance, the item one on the public interest and item two on international involvement. We know from other surveys that Americans are not very critical of big business. The trace



GRAPH 1

THE TRACE LINES OF 4 ITEMS IN AN ATTITUDE TEST USED BY THE OIL INDUSTRY

line of item one begins on a rather high point which means that irrespective of the attitude toward this specific industry people are willing to concede that corporations are not a nuisance. On the other hand, the item is rather stringent in the sense that the probability of a positive reply rises only after a considerable amount of general friendliness has been reached.

Item two in spite of having the same marginal proportions as item one,

has a markedly different trace line. It is a more discriminant indicator in as much as the probabilities are very different at the two ends of the general attitude scale. At the same time it is more lenient in the sense that already a smaller amount of general good will absolves the oil industry from malfeasance in the international field. The reader can make a similar comparison between item three and four. To save space it is not done here.

But now it is of crucial importance to realize that in latent structure analysis there *doesn't enter an outside measure for the general attitude score* which is plotted on the x-axis of Graph 1. This so-called latent continuum is *derived from the interrelations between the items with the help of a mathematical theory.* We assume some appropriate mathematical expression for the trace line. In the present case it was the equation:

$$\text{Equation 1)} \quad y = a + bx^d$$

where y stands for the probabilities of a positive answer and x for the respondent's position on the unknown and unmeasured latent continuum. The task is to compute for each item the coefficients of this equation. For our four items they turn out to be:

TABLE 5

THE COEFFICIENTS OF THE TRACE LINES CORRESPONDING TO 4 ITEMS IN GRAPH ONE

Item No.	Coefficients			Actual Marginals
	d	b	a	
1	2.2	.50	.39	.55
2	.67	.90	0	.54
3	4.1	.86	.05	.22
4	6.8	.86	.14	.25

The raw material for these computations are the frequency of various response patterns. When we have a series of questions then we can count the proportion of people who give a positive answer to one item, along two pairs of items, to triplets, and so on. It is these joint frequencies which are linked by so-called accounting equations to the latent parameters—to wit, the coefficients of the trace lines and the distribution of people over the latent continuum.

Equation 1 is often useful for projective material and has therefore been called the *latent content model.* As a person moves along the latent continuum his probability of giving a positive answer increases but there is usually not a specific point where such a curve takes a sharp turn and even

at the extremes there is a good probability that a person replies to a specific item in a way which doesn't correspond to his underlying characteristic. This is exactly what projective tests do when we have to count on many accidental factors affecting the answer. The study of this latent content scale has made considerable progress in recent years. It provides an important counterpart to the latent distance scale which has been discussed in previous publications by this and other writers.[1] Just for the record it might be mentioned that both these models derive from the more general formula:

$$\text{Equation 2)} \quad y = a + b(x - c)^d$$

If we set $c = 0$, then we get the latent content model. If on the other hand we let d approach infinity we get the latent distance model.

The Location of Discrete Classes

So far we have mainly discussed the form of the trace lines. Another recent development has to do with the distribution of the population on the latent continuum. The main contribution made by mathematicians to latent structure analysis had to do with the so-called discrete class model. Take as an example a study reported by Gibson. His manifest data were statements of people as to the kind of radio programs they liked. Again using the information on how many people liked various combinations of programs he was able to show that the radio audience could be divided into five major types which had different tastes and also different characteristics.[2]

But the classes so developed could not be located in any metric system. This was especially painful in situations where the latent classes were obviously lying on a one-dimensional continuum. It could be shown, for instance, that the Chapin living-room scale divided people into three classes of specific size; but what distance the classes were from each other was left undetermined. This problem is now solved and a typical result can be shown in the following example. Eight hundred employees of an industrial company were asked a variety of questions regarding their jobs:

1. Are there any things about your job that you particularly like? Positive response: "A lot of things".

2. Are there any things about your job that you particularly dislike? Positive response: "None" and "not many".

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[1] Green (1954) and Coombs (1953).

[2] The mathematics of this procedure were developed by a variety of authors in addition to this writer, especially Anderson (1954), Green (1952), and Gibson (1955).

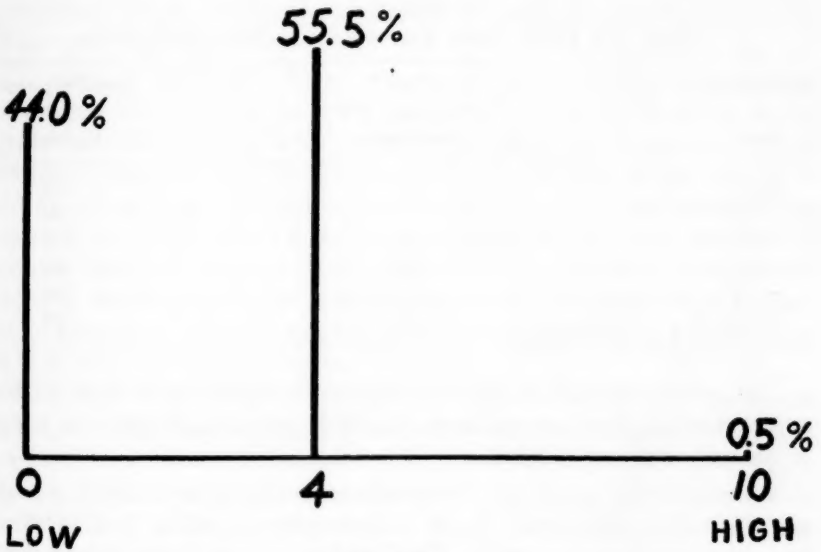
3. How often do you look forward with some pleasure to your day on the job? Positive response: "Every day" and "Almost every day".

4. If someone asked you about getting a job like yours which of the following would you be inclined to do? Encourage her? Discourage her? Neither? Positive response: "Encourage her".

5. Do you ever feel you would like to quit and get a job with some other company? Positive response: "Never".

6. Do you feel that you would like to get a transfer from your present job to some other kind of work in your department? Positive response: "Seldom" and "Never".

A latent structure analysis showed that these employees could be divided into three classes according to their degree of satisfaction. The size of these three classes and their relative distance is shown in Graph 2. The distances are relative in the sense that the unit on this scale is left arbitrary but the fact that the middle class is nearer to the bottom than to the top class is a finding which is due to a considerable refinement of latent structure analysis.



GRAPH 2

THE LOCATION OF 3 CLASSES OF EMPLOYEES ACCORDING TO THEIR DEGREE OF SATISFACTION WITH THEIR JOBS. THIS DISTRIBUTION OF RESPONDENTS IS DERIVED FROM THEIR RESPONSE PATTERNS AND NOT BY FORMING AN ARBITRARY ATTITUDE SCORE

This example provides an occasion for showing how latent structure models are tested. An initial inspection of the data suggested that linear trace lines would be appropriate. This required the computation of two coefficients for each of the six trace lines, the location points for the three classes and two of the three class frequencies (the third one is determined by the size of the sample). For these 17 latent parameters we have 63 manifest data—the frequencies of all possible response patterns. If the model is not appropriate to the data then the following happens. We would compute the latent parameters and derive from them response frequencies which the model requires; but they would be very different from the actual manifest data. The difference, incidentally, would be the larger, the higher the order of frequencies we are dealing with.

Table 6 illustrates such a comparison. All possible combinations of five questions were formed. The first column reports the proportion of respondents who actually gave a positive reply to all five items in a given triplet. The second column shows the proportions which the latent structure model requires. The correspondence is remarkably close.

TABLE 6

ACTUAL AND FITTED JOINT FREQUENCIES OF ITEM QUINTUPLETS

Combination of Items	Actual Joint Frequencies	Joint Frequencies Required By Model
12345	.127	.129
12346	.132	.134
12356	.113	.115
12456	.112	.103
13456	.119	.114
23456	.174	.178

An effort now will be made to explain in general terms how a latent structure model is set up and how this whole approach fits into the stream of general empirical research.

About twenty years ago the dominant textbook in statistics was the one originally written by Yule and, in later editions, edited by Kendall. It was, in a way, a curious book. The first few chapters dealt with what the authors called the statistics of attributes. The remainder of the text dealt with quantitative variables and their distribution. Since then innumerable statistical textbooks have appeared but they all center on quantitative dis-

tribution statistics and the many developments which have occurred in it since the appearance of the Yule-Kendall volume. Attribute statistics however, is either hardly treated at all or is presented in the same form which it had several decades ago. Probably the most curious aspect of this situation is what happened in factor analysis. Often the available material consisted of dichotomies like yes-no and true-false answers. Between any such dichotomies a 4-fold table can be formed. In order to force this material into the quantitative mode all sorts of artifices were invented like tetrachoric correlations and similar coefficients. Many authors had noticed that such transubstantiation of qualitative data into quantitative formula led to miserable consequences. And yet the practice was followed mechanically.

It was Louis Guttman who first pointed out that qualitative data needed their own treatment, and for certain specific scaling problems he offered original and important solutions. But, unfortunately, younger authors were fascinated by the scaling idea and didn't realize a much more general implication: the bulk of social research data are likely to be of a qualitative nature and therefore the whole problem of attribute statistics has to be given a high priority. Especially if one turns from psychometrics to such fields as attitude surveys or sociometry, the current textbooks on statistics are hardly of any use.

Latent structure analysis is part of a modern trend to overcome a pseudo-quantification and to develop analytical procedures adequate to the typical qualitative data with which we mostly deal in social research. One of the central notions which is needed in this development is the idea of a dichotomous system. It is well exemplified by the illustrations given in this paper. If people are asked k dichotomous questions then they can give 2^k response patterns. But we don't have to restrict ourselves to questions. Objective observations or the analysis of documents can also lead to classificatory systems by which people are characterized according to whether they do or they do not satisfy a certain criterion.

Yule and Kendall introduced the very important notion of a fundamental set. Suppose we ask people three dichotomous questions; then eight combinations of answers are possible. But instead of studying these so-called ultimate frequencies we can as well study the joint positive frequencies as was mentioned before: the proportion of people who respond positively to a single question, to pairs of questions and to all three questions. Given one fundamental set it is always possible to compute all the other ways in which a dichotomous system can be presented.

Latent structure analysis has greatly extended this notion of funda-

mental sets. In the "first statement" the so-called basic matrices were introduced. Briefly the idea was as follows: we could begin by studying pairs of items; this would roughly correspond to the well-known correlation matrix of the factor analyst. But then we could go on to higher order matrices; we would take people who give a positive response to item one and then study all pair-wise combinations of the remaining items. This would correspond to a kind of conditional correlation matrix; to use again the analogy with factor analysis, we could take a subset of people who were in the upper half of a given test and then set up for them a correlation matrix for the remaining tests. This was something which traditional psychometrics had never done. The early results of latent structure analysis were all due to the fact that triplets of items were jointly taken into consideration.

It seemed an obvious question to ask what would happen if quadruplets or quintuplets of items were considered. For a while, however, it seemed that no new information was to be gained that way. The crucial turning came with the investigation of so-called *ascending matrices*. They were indeed a very new type of fundamental set. Their main characteristic is that they contain within the same matrix items of varying levels of frequencies. Suppose we have to deal with six items, then a typical ascending matrix would look as follows:

1	p_1	p_2	p_{15}	p_{25}	p_{12}
p_3	p_{13}	p_{23}	p_{153}	p_{253}	p_{123}
p_4	p_{14}	p_{24}	p_{154}	p_{254}	p_{124}
p_{36}	p_{136}	p_{236}	p_{1536}	p_{2536}	p_{1236}
p_{46}	p_{146}	p_{246}	p_{1546}	p_{2546}	p_{1246}
p_{34}	p_{134}	p_{234}	p_{1534}	p_{2534}	p_{1234}

It will be noticed that this matrix consists of a mixture of joint frequencies going from one item along to quadruplets of items. The reader will easily see the simple rule by which such a matrix can be derived from the first row and the first column.

It is the rank of these ascending matrices which yields a surprising amount of new information. One general example will suffice to indicate their importance. Suppose we want to compare two kinds of models. In the one model the latent trace is a quadratic polynomial; where the trace would look very nearly like the trace line of item one in Graph 1. The other model will have a two-dimensional latent continuum. The latent trace for an item would not be a line but a surface in our traditional three-dimensional space. Suppose further that in the second model the trace surface is a plane. These two models would lead to two manifest dichotomous systems which are in

many respects alike. They would have the same basic matrices on any level of complexity. The one respect in which they would be different is in the ascending matrix which we have just presented. In the two-dimensional model the determinant of this matrix would be different from zero. In the one-dimensional model the determinant would be zero. If, however, we strike out the last column and the last row of this matrix the determinant would also not vanish for the one-dimensional model. Finally, if we deal with the unlocated classes which were reported in previous publications even the reduced ascending matrix would have a vanishing determinant.

No space is left in this anniversary issue of SOCIOMETRY to go into further details. Under its old regime SOCIOMETRY has been a pioneer in the field of modern methods of social research. As a retiring member of the Editorial Board this writer hopes that the American Sociological Society which is taking over the Journal will maintain its distinct role. Then there will be an opportunity to elaborate on many details of this presentation which had to remain sketchy for the time being.

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MEASUREMENT OF THE TENDENCY TOWARD RECIPROCATION OF CHOICE[1]

LEO KATZ AND JAMES H. POWELL

In many sociometric investigations, there is evident a tendency to reciprocate choices more frequently than is indicated by chance coincidence of choice. Wherever such a tendency is real and sizeable, it is unrealistic to use random models to describe and evaluate the phenomena. The question of whether the tendency is real, i.e., different from what might be attributed

[1] This work was supported by the Office of Naval Research.

to random effects, is answered in part, at least, by recent work by Katz, Tagiuri and Wilson (2, 3). This paper is addressed to the other question, viz., that of evaluating on some convenient scale the strength of the tendency toward reciprocation of choice.

Because of its greater simplicity, we consider, first, the case of *fixed* sociometric tests. We shall use the descriptions "fixed" and "free" to designate whether the test is so arranged that the number of responses permitted each individual is one or the other. In the fixed case, each of the N individuals in the group expresses a fixed number, d, of choices among the N — 1 others of the group. Although the distribution of the number of reciprocated choices depends heavily on whether we do or do not take into account the numbers of choices received by various individuals, we shall completely avoid questions of the appropriate frame of reference through exclusive use, in the sequel, of expectations or mean values, these being identical in both reference frames.

The Fixed Case

It is well-known through work by Lazarsfeld reported on in a paper by Moreno and Jennings (1) that the probability of a mutual choice between any arbitrary pair of individuals is, by chance alone, $d^2/(N-1)^2$ and, consequently, the expected total number of mutuals in the group is given by

$$E(m|o) = \frac{Nd^2}{2(N-1)}. \tag{1}$$

The number to the right of the vertical bar in (1) represents the value of an index to be defined later. The value zero corresponds to purely chance reciprocation.

Many options are available in choosing an index of tendency toward reciprocation; we choose a very simple one. The desiderata we put forward are i) that the index should be a linear function of the observed number of mutuals, ii) that the index should take the value zero when there is no particular tendency in favor of reciprocation *or* of anti-reciprocation, i.e., mutuals are formed in a purely random manner and iii) that the index should have the value unity when the tendency is maximal, i.e., every expressed choice is necessarily reciprocated.

Consider, for this purpose, the following computation of the probability of mutual choice between two designated individuals. Pr {a chooses b *and* b chooses a} = Pr {a chooses b}. Pr {b chooses a, when it is known that

a chooses b}. The last factor is the conditional probability of primary interest in this discussion. If we write this as the *a priori* probability that b chooses a *plus* a fraction of the *a priori* probability that b does not choose a, then the fraction is itself an index of precisely the kind we seek. It is obvious that the fraction is zero when there is no tendency to reciprocate and unity when the tendency is maximal; it remains to be shown that the fraction may be estimated as a linear function of the number of mutuals.

In the present (fixed) case, we may write Pr {mutual choice between a and b} $= \frac{d}{N-1}\left[\frac{d}{N-1} + \tau\,\frac{N-1-d}{N-1}\right]$ and, hence,

$$E(m|\tau) = \frac{Nd^2}{2(N-1)}(1-\tau) + \frac{Nd}{2}\tau. \tag{2}$$

Setting the observed number, m, of mutuals equal to the (conditionally) expected number, we obtain from the resulting equation an estimate, t, of τ, as

$$t = \frac{2(N-1)\,m - Nd^2}{Nd(N-1-d)} \tag{3}$$

This estimate is unbiased and consistent. Further, since the only information regarding reciprocation tendency available in the observations is contained in the observed number of mutuals, it is likely that m, and, hence, t are sufficient statistics. We reiterate that we do not intend to explore the statistical aspects of this problem and only remark that the distribution of t for known τ is explicitly given by the distribution of m when τ is known. Partial results for the latter when $\tau = 0$ appear in a pair of forthcoming papers by Katz and Wilson (2) and by Katz, Tagiuri and Wilson (3).

It is obvious that setting $\tau = 0$ in (2) gives immediately equation (1); therefore, (2) is the general form of the expected number of mutuals and (3) provides an estimate of the parameter τ. We turn next to the implications of the range of possible values of t. These bring up and illuminate a theoretical question of considerable importance.

In the Katz, Tagiuri and Wilson paper mentioned above, it is specifically indicated that, although the maximum possible number of mutuals is Nd/2 for the fixed case, it may be appreciably less than this if we take into account the numbers of choices received, i.e., consider a more restrictive frame of reference. Thus, when $N = 6$ and $d = 2$, the maximum possible

is six mutuals while, if we know that the various members *receive* 5, 4, 2, 1, 0 and 0 choices, respectively, the maximum is only three mutual choices. In both cases, the expected number of mutuals is 2.4 when $\tau = 0$; t (using (3) above) is 1/6. Suppose that a group of six individuals express two choices each, receive choices as indicated and produce a configuration of choices involving three mutuals. Is it, then, more reasonable to claim that the strength of the tendency toward reciprocation is maximal, i.e., $\tau = 1$, or to claim that the strength is of the order of one-sixth of maximal?

To answer questions of this type, we advance the notion that the numbers of choices received are a side-effect, as it were, of the strength of reciprocal tendency and that, if the strength is actually maximal, members who express choices will not fail to receive choices (from those they choose). Thus, our answer to the question raised is that the strength is at the *lower* of the two levels. Adoption of this notion removes the last bar to acceptance of t as defined in equation (3) as the index of the tendency toward reciprocation of choice.

The minimum value taken by the index, in the event that no mutual choices are observed, is $t_{min} = -d/N - 1 - d$. If, as is usually the case, $d \gtrless \frac{1}{2}(N-1)$, t_{min} is between -1 and 0. The implication, here, is that the opportunity for expression of anti-reciprocation is limited by the relative sizes of the chosen and unchosen groups for each individual. If full opportunity is to be provided in the sociometric text, the number of choices required, d, must be equal to $\frac{1}{2}(N-1)$.

The Free Case

In this section, we consider the modifications needed in equations (2) and (3) when the members of the group are permitted to express any numbers of choices. For notational purposes, suppose that the ith individual chooses r_i others ($i = 1, 2, \cdots, N$), that $\Sigma r_i = T$ and $\Sigma r_i^2 = U$. As in the previous case, the probability of a mutual choice between individuals i and j, by chance alone, is $r_i r_j/(N-1)^2$. Since this is also the expected number of mutuals between i and j, and expectation is simply additive, it follows that we may obtain the expected number in the group by adding these for all distinct pairs. With minor simplification, the result is

$$E'(m|0) = \frac{T^2 - U}{2(N-1)^2}. \tag{1'}$$

This reduces to equation (1) in case all $r_i = d$ and, consequently, $T = Nd$ and $U = Nd^2$.

With (1′) as starting point and introducing τ' as the analog of τ in the fixed case, we obtain

$$E'(m|\tau') = \frac{T^2 - U}{2(N-1)^2}(1-\tau') + \frac{T}{2}\tau'. \tag{2'}$$

Once again, setting $E'(m|\tau') = m$ produces the estimate

$$t' = \frac{2(N-1)^2\, m - T^2 + U}{(N-1)^2\, T - T^2 + U}. \tag{3'}$$

Both of these equations reduce to their fixed case counterparts when all $r_i = d$. Thus, (2′) and (3′) are the general forms while (2) and (3) are appropriate for the special case. We shall next examine certain circumstances in which the unprimed equations may give sufficiently accurate approximation to the primed ones.

Approximation

It often happens that, although the numbers of expressed choices are not all equal, they are very nearly so. In such circumstances it seems hardly worthwhile to use the more general expression (3′) for τ'. We may easily modify (3) for this case by making this a function of T rather than of d. Multiplying numerator and denominator of the right member of (3) by N and replacing Nd by T, we have

$$t_a = \frac{2N(N-1)\, m - T^2}{T\,[N(N-1) - T]}. \tag{3a}$$

In the example following this section, we have an excellent illustration of precisely this situation.

Example

C. H. Proctor[2] used nine sociometric questions in studying interpersonal relations in the village of San Juan Sur, Costa Rica. In response to each question, the seventy-five subjects were asked to give three names. With very few exceptions, these instructions were followed. Accordingly, we may use equation (3a) to estimate the index of tendency to reciprocation. The questions follow, in the order asked, together with the observed values of T and m.

[2] Private communication.

Sociometric Questions (Proctor)

1. Among the people that you know, whom do you consider as most capable, honorable, active, and whom are concerned with the problems of you and the people of this place? T = 223, m = 10.
2. If you were to leave for a few days, whom would you leave in charge of your affairs? T = 219, m = 52.
3. Whom do you invite to parties at your house? T = 221, m = 54.
4. In case of a death in the family, whom would you notify first? T = 221, m = 52.
5. Would you name those families from which you would borrow money if it were necessary? T = 216, m = 57.
6. Which families do you visit most frequently? T = 223, m = 50.
7. If you are sick who are the first friends or relatives who come to see you? T = 223, m = 50.
8. Who are the persons in whom you have "confidence" and with whom you discuss your personal problems? T = 220, m = 49.
9. Which persons would you pick to represent you and the people of this place on a commission? T = 220, m = 8.

The original analysis of the data by Proctor included computation of the matrix of intercorrelations of choices expressed and a factor analysis. This produced two factors, one with heavy loadings in questions 1 and 9, the other with heavy loadings in the remaining questions. As is obvious from our arrangement of the data, these "factors" appear to be only two distinct levels of tendency to reciprocity.

The computed values of t_a are .052 and .034 for questions 1 and 9, and .453, .467, .449, .509, .425, .425 and .423 for the others, respectively. The standard errors are all of the order of .02, so that there is no doubt that the two sets of questions are fractionated as indicated. There is also an indication that the tendency toward reciprocation, among the "strong" questions, is strongest in question 5.

Reading of the questions drives these points home solidly. Questions 1 and 9 essentially ask "Who are the leaders here?" Aside from a kind of professional courtesy among the actual leaders, there should be no evidence of reciprocal choice tendency. On the other hand, the remaining questions essentially ask "Who are your associates?" in a number of activities. Association is almost by definition a mutual activity. Some amusing speculations may be drawn from the apparently greater strength of mutuality in question 5, on borrowing money.

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ON THE CLASSIFICATION OF GROUPS

EDGAR F. BORGATTA AND LEONARD S. COTTRELL, JR.

A current version of the chronic question "When does a collection of persons become a group?" occurs in the issue of whether or not groups artificially formed for laboratory experimental research are "real" groups in the same sense as so-called natural groups such as families, gangs, or religious sects. This problem is, of course, not peculiar to the laboratory group. The same issue is seen in considering whether or not certain ephemeral associations which are "natural" groups, e.g., a collection of strangers who go out on a week-end charter cruise.

Even a cursory consideration of the questions raised should make it reasonably clear that the usual phrasing of the problem is not productively stated, and one is led to structure the questions differently. Even if the assumption is made that certain collectivities are groups and others are not, and that there is a difference in kind, when the effort is made to specify the differences, we find ourselves considering variables on which all collectivities could be ordered, and in terms of which they could be variously classified for different purposes. Thus, the question shifts from whether an aggregate is a group or not to one concerning the degree to which such an aggregate is characterized by a specified complex of variables assumed to be components of "groupness." Such a formulation points to the necessity for identifying the relevant critical component variables in terms of which any collection of persons may be assessed and, at any given point, be classified. If such specification proves feasible, then the rather futile question of whether or not a given collectivity is in fact a group is translated into the more productive one of the assessment of the collectivity with respect to the general variables which are properties in some degree of all alleged groups.

The present paper seeks to make a contribution to the effort of an increasing number of investigations attempting to identify the basic variables common to interacting collections of persons and to indicate their relevance for describing and classifying these phenomena. To do this we have chosen to

apply the procedures of factor analysis to the recorded observations on 166 laboratory groups of three persons each which have been reported in other contexts (2). Essentially, our problem has been to determine whether the factorial techniques used would yield a set of underlying or basic variables which are indicative of general independent characteristics of the observed processes and which give some promise of being applicable to the assessment of other collectivities.

The units of study are the performances of three-man groups in two different task conditions, one which has been characterized as actual behavior and the other as role playing behavior. The actual behavior consisted of four six-minute units of interaction in which the subjects were given an opportunity to get acquainted, to plan a role playing session, to plan a second role playing session, and then were told to relax and that they could talk about whatever they wanted. The role playing sessions were the enactments and results of the planning sessions. There were 166 groups which were observed, each of different three-man composition, and 24 minutes of actual behavior and 24 minutes of role playing was scored for each. Aside from being together in a physical sense while instructions were read, and then similarly together during individual testing periods, this was the total life for each group.

The units of observation used were the Bales interaction process analysis categories (1). These categories allow us to examine the groups in terms of characteristic patterns of interaction in the observed groups. If such characteristic patterns exist, they not only indicate the recognition (or assessment) of persons and their relative positions, but the implementation of these differentiated structures in interaction. Our inclusion of both actual and role playing materials allows us to examine the differences and similarities for these two generalized and ambiguous task situations.

The variables included in this analysis are the twelve interaction categories plus the total interaction rates for the actual and the role playing conditions. In addition, we have included the range (rate of highest initiator of action minus rate of lowest initiator) of total initiated activity in the actual condition. Additional variables include the consensus on the leadership (a restrictive measure, computed as the range between the highest and lowest rating on leadership), positive expansiveness in the group (the total number of positive choices minus total number of negative choices), and the positive expected expansiveness (the total number of expected choices minus the total number of negative expective choices). The population variables included were the mean I. Q. rating (SRA Primary Mental Abilities—index score),

the mean age of members, the mean education, and the military grade of the participants (homogeneous for any group).

In addition to the above, the original matrix of intercorrelations included measures of dispersion (ranges) for all relevant variables. However, an intensive preliminary examination of the matrix indicated that the ranges correlated very closely with the means. To avoid development of trivial factors, and because the restriction could not be expected to allow introduction of much additional information, these measures were omitted from consideration at this time. The single exception in which the range did not appear to be a direct function of the rate was the total initiated behavior in the actual behavior situation. In advance of undertaking the factor analysis it was acknowledged that the performance in the actual behavior and the role playing behavior was highly cross correlated, and that a possibility of trivial factors arising was present (i.e., factors defined which are primarily reliability estimates of a variable). Similarly, it was known from previous analysis that the population measures would be related in given ways. In particular, age and military grade have occurred in a "maturity" factor.

In all, thus, our analysis utilized 34 variables. The matrix of intercorrelations is given as Table 2, and this table indicates the abbreviated variable designation.

To compare the actual and the role playing conditions briefly (Table 1),

TABLE 1
MEAN PERCENTAGE RATE FOR 166 THREE MAN GROUPS

I. P. A. Category	Actual	Role Playing
1. Shows solidarity	2.3	.7
2. Shows tension release	6.0	2.2
3. Shows agreement	9.3	10.8
4. Gives suggestion	5.8	2.8
5. Gives opinion	27.3	41.4
6. Gives orientation	33.8	29.0
7. Asks for orientation	6.8	4.4
8. Asks for opinion	1.9	5.1
9. Asks for suggestion	.7	.2
10. Shows disagreement	.9	1.3
11. Shows tension	5.1	1.6
12. Shows antagonism	.1	.5
Mean number of responses in each session	290.1	276.5

TABLE 2

MATRIX OF INTERCORRELATIONS

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1. Shows solidarity—Actual	—	22	14	04	03	—09	02	02	04	22	06	00	20	02	10	23	—12	12	22	—18	13	21	02	22	07	38	07	02	—07	00	03	—18	16	—11
2. Shows tension release—Actual		—	18	27	16	—23	00	—16	—09	31	—02	12	37	05	22	65	05	13	09	—22	04	00	29	39	—16	39	07	33	—09	24	—03	—09	26	—02
3. Shows agreement—Actual			—	16	11	06	—15	02	—12	03	—29	—27	43	09	26	—27	35	20	—18	13	—26	—11	26	04	—22	09	—09	16	—02	13	16	28	24	34
4. Gives suggestion—Actual				—	—07	—31	—18	—02	27	43	—05	—04	09	00	18	11	—02	11	02	—15	—04	04	33	34	—09	29	—07	33	—01	—02	—18	—18	13	—07
5. Gives opinion—Actual					—	—02	—02	32	—04	02	—37	20	53	00	04	00	27	24	29	11	—11	04	—15	—22	—18	00	31	—20	00	16	19	—13	—07	—16
6. Gives orientation—Actual						—	47	—02	—22	—27	—34	—04	53	57	—14	—06	13	—06	—11	42	05	—20	—03	—31	09	—27	13	—11	28	00	20	16	07	04
7. Asks for orientation—Actual							—	17	—19	—13	02	08	24	13	—24	—04	11	—27	11	07	31	—02	—06	—11	13	—24	09	—18	16	02	—04	37	02	49
8. Asks for opinion—Actual								—	—11	01	15	11	04	04	—02	—18	—11	09	18	02	09	20	—16	09	09	00	16	—02	08	13	—07	—11	02	—04
9. Asks for suggestion—Actual*									—	09	13	00	—17	17	—03	—18	19	—02	—04	07	—04	—16	08	02	—07	—10	02	—04	20	—06	—07	—06	—15	—20
10. Shows disagreement—Actual*										—	—07	10	07	—04	27	11	—09	30	00	—18	04	00	29	44	—04	37	00	27	11	10	—02	—18	02	—13
11. Shows tension—Actual											—	—08	—37	—29	—07	07	—11	—06	09	—51	15	22	03	02	55	—06	—13	—02	—11	—11	—23	—35	00	—23
12. Shows antagonism—Actual*												—	16	—37	16	18	—04	—04	14	29	00	03	08	36	11	26	22	08	34	—15	—27	—36	—28	—28
13. Total initiated—Actual													—	18	18	16	31	00	11	26	11	—04	15	—04	—16	06	31	02	07	20	17	02	07	—04
14. Range between highest and lowest person—Actual														—	00	00	02	00	07	18	—18	—09	11	02	—09	00	02	11	22	03	—04	04	09	02
15. Shows solidarity—Role playing*															—	27	—09	45	—09	—20	11	04	31	18	05	62	09	11	00	—11	—20	11	04	07
16. Shows tension release—Role playing																—	00	09	—15	—11	31	07	—02	29	11	23	31	26	—04	00	07	—07	07	—04
17. Shows agreement—Role playing																	—	—35	18	05	—35	—31	—09	—09	—16	—34	16	—07	18	21	—02	—07	04	—11

TABLE 2 (*continued*)
MATRIX OF INTERCORRELATIONS

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
18. Gives suggestion—Role playing																		—	−20	−02	09	11	70	35	07	63	−07	24	02	−11	−07	29	24	42
19. Gives opinion—Role playing																		—	−37	11	50	−32	−11	−16	06	65	−16	−27	06	−11	−38	−07	−33	
20. Gives orientation—Role playing																			—	18	−44	−27	−36	−07	−42	20	−04	20	15	43	26	04	04	
21. Asks for orientation—Role playing																				—	29	09	09	22	24	35	00	−07	−19	04	02	−04	00	
22. Asks for opinion—Role playing																					—	09	11	13	34	16	11	−22	03	−13	−20	−07	−02	
23. Asks for suggestion—Role playing*																						—	20	24	28	−18	09	13	−11	−11	13	15	33	
24. Shows disagreement Role playing																							—	—	11	68	13	34	−11	07	−24	−09	16	11
25. Shows tension—Role playing*																									—	00	−04	−04	03	−19	−16	−33	04	−29
26. Shows antagonism—Role playing*																										—	21	11	06	−19	−18	06	16	14
27. Total initiated—Role playing																											—	02	−20	03	−14	−24	02	−30
28. Mean I.Q. (SRA-PMA index)																												—	11	14	07	09	33	11
29. Consensus on leader*																													—	−16	04	−13	00	−11
30. Group positive expansiveness*																														—	51	08	−03	14
31. Group expected expansiveness																															—	−13	−16	−16
32. Mean age																																—	09	93
33. Mean years of education																																	—	18
34. Military grade of group members																																		—

we may note that the actual condition required getting acquainted, and so we find a higher percentage of activity in showing solidarity here than in the role playing. The actual condition put a strong emphasis on task, and this is reflected in the higher rates of giving and asking for information, and giving and asking for suggestion. In the actual situation, more tension is

TABLE 3
THE ROTATED FACTORS

Variables	1	2	3	4	5	6	7	h^2
1. Shows solidarity—Actual	18	19	06	—24	23	04	—08	19
2. Shows tension release—Actual	15	21	44	—15	58	—07	—03	62
3. Shows agreement—Actual	—10	16	38	—05	09	46	33	51
4. Gives suggestion—Actual	—21	—04	—03	—06	54	30	—16	46
5. Gives opinion—Actual	—11	64	14	22	—07	09	—13	52
6. Gives orientation—Actual	44	09	12	36	—44	31	16	66
7. Asks for orientation—Actual	69	—05	06	11	—34	15	07	64
8. Asks for opinion—Actual	24	10	—10	02	—08	11	00	10
9. Asks for suggestion—Actual	18	18	—12	17	10	17	—22	20
10. Shows disagreement—Actual	03	—02	04	04	59	11	—13	38
11. Shows tension—Actual	28	—34	—31	—50	—02	—19	—37	71
12. Shows antagonism—Actual	10	10	—24	45	22	—17	—38	50
13. Total initiated—Actual	32	60	42	27	01	32	—01	81
14. Range between highest and lowest person—Actual	18	—06	12	12	—06	50	03	32
15. Shows solidarity—Role playing	—06	35	—20	00	46	12	20	43
16. Shows tension release—Role playing	24	22	25	—01	44	—53	—01	64
17. Shows agreement—Role playing	—12	06	39	08	—19	34	—22	38
18. Gives suggestion—Role playing	08	19	—33	08	44	21	51	66
19. Gives opinion—Role playing	06	52	03	37	—15	07	—43	62
20. Gives orientation—Role playing	01	09	12	74	—22	—14	18	67
21. Asks for orientation—Role playing	45	25	—10	10	07	—29	15	40
22. Asks for opinion—Role playing	23	25	—20	—48	06	—08	—11	41
23. Asks for suggestion—Role playing	03	29	—25	—05	35	34	24	45
24. Shows disagreement—Role playing	13	—06	03	—00	78	00	01	63
25. Shows tension—Role playing	39	—13	—39	—11	—04	—08	—21	39
26. Shows antagonism—Role playing	07	38	—26	—19	69	01	21	77
27. Total initiated—Role playing	19	61	—07	08	05	—07	—27	50
28. Mean I.Q. (SRA-PMA index)	14	—17	22	—01	49	—01	05	34
29. Consensus on leader	18	—18	—01	50	05	21	13	38
30. Group positive expansiveness	10	—01	58	13	—01	—03	—04	37
31. Group expected expansiveness	—04	05	43	23	—18	—18	00	31
32. Mean age	—10	—06	05	09	—10	—02	93	90
33. Mean years of education	19	—06	15	—18	22	20	17	21
34. Military grade of group members	19	—18	07	—04	01	07	91	91

apparently generated, but more tension is also released. The role playing condition has lower rates of showing tension, and in the less inhibited circumstances of role playing, there is more showing of active negative responses in terms of disagreement and antagonism. The greater willingness to become "involved" in the role playing situation is not only shown in the higher rates of disagreement and antagonism, but in the higher rates of agreement and giving and asking for opinion. The mean interaction rate in the role playing condition is somewhat lower than in the actual condition. Here, since ordinarily low activity rate is associated with high tension level, we would attribute the high rate of interaction in the actual condition to what might be characterized as the urgency to do things to get to task completion.

The correlation technique used was Flanagan's coefficient. However, in some cases the nature of the distribution for a variable did not permit coding for Flanagan's coefficient. These variables are marked on Table 2, the matrix of intercorrelations, with asterisks. The entries which are intersections of two variables marked with an asterisk were computed as corrected tetrachoric correlation coefficients. All other values in the table are Flanagan's coefficients. Use of the r_{tet} appeared more desirable than other alternatives even though it might introduce large variance error. The intersection values were computed using the Phi coefficient, for example, and seemed on a comparative basis unduly to underestimate relationships. This, of course, would be expected since the difficulty of the item restricts the magnitude of Phi.

The method of factor analysis used was Thurstone's complete centroid technique. On the basis of several criteria the first seven factors extracted were kept for rotation. The rotated factor matrix is given as Table 3. The factors are given in orthogonal form.

The Factor Structure[1]

The first factor may be designated as *tension-neutral activity*. A group which is high on this factor may be conceived as one in which members operate under tension but respond in patterns of emotionally neutral activity.

[1] Robert F. Bales has gone over these materials and has suggested names for the factors with somewhat different shades of meaning, as follows: Factor 1, emotionally inhibited neutrality; Factor 2, interactive freedom or interactive involvement; Factor 3, positive identification with the group; Factor 4, leader consensus; Factor 5, intellectual compulsiveness; Factor 6, leader domination; and Factor 7, routine decisive performance.

The highest loading occurs in asking for orientation (information, repetition, and clarification), both in the actual and role playing situations, and giving orientation in the actual. Appreciable loadings occur for showing tension in both the actual and role playing situations, and also for the total rate of activity in the actual situation.

FACTOR 1

Asks for orientation—Actual	.69
Asks for orientation—Role playing	.45
Gives orientation—Actual	.44
Shows tension—Role playing	.39
Total rate—Actual	.32
Shows tension—Actual	.28

The appropriate shorthand term for the second factor is *involvement activity*. A group which is high on this factor tends to manifest a marked amount of activity which would indicate emotional involvement, expressions of emotionally toned opinion and of affect together with an absence of tension. There appears to be a substantial sense of security in the group as seen in the high rate of expression of both antagonism and solidarity in the role playing situation. The heaviest loadings are in the total rate and in the rate of giving opinion (evaluation, analysis, and expression of feeling), both in the actual and the role playing situations. In the actual situation there is an absence of tension, and in the role playing there are appreciable loadings in showing antagonism and solidarity.

FACTOR 2

Gives opinion—Actual	.64
Total rate—Role playing	.61
Total rate—Actual	.60
Gives opinion—Role playing	.52
Shows antogonism—Role playing	.38
Shows solidarity—Role playing	.35
Shows tension—Actual (absence)	—.34

We have provisionally called the third factor *group identification*. Groups which are high on this factor would be marked by strong positive orientation of members to the group and a lively interest in "belonging." The heaviest loadings are in the expansiveness in making choices and expecting choices among the members. The rate of activity in the actual behavior situation is high. In both role playing and actual behavior situations there are appreciable loadings in showing agreement, showing tension

release, and negative loadings (absence) in showing tension and antagonism. In addition, in the role playing there is an absence of giving and asking for suggestions.

FACTOR 3

Expansiveness	.58
Expected expansiveness	.43
Shows tension release—Actual	.44
Total rate—Actual	.42
Shows agreement—Role playing	.39
Shows tension—Role playing (absence)	—.39
Shows agreement—Actual	.37
Gives suggestion—Role playing (absence)	—.33
Shows tension—Actual (absence)	—.31
Shows antagonism—Role playing (absence)	—.26
Asks for suggestions—Role playing (absence)	—.25
Shows tension release—Role playing	.25
Shows antagonism—Actual (absence)	—.23

A short name for the fourth factor is *leader-structure*. Groups which are high on this factor would be characterized by clear allocation of function, a sense of direction, and unambiguous leadership. The single appreciable loading for "consensus on leader" occurs in this factor. In the actual behavior situation there are appreciable loadings in giving orientation, in showing antagonism, and a negative loading in (absence) on showing tension. The implication seems to be of directed behavior by a "leader." In the role playing condition there is a high loading on giving orientation, and giving opinion in the absence of asking for it. The directive activity apparently represents quick and decisive establishment of a hierarchy in the group with a concomitant absence of tension.

FACTOR 4

Gives orientation—Role playing	.74
Consensus on leader	.50
Shows tension—Actual (absence)	—.50
Asks for opinion—Role playing (absence)	—.48
Shows antagonism—Actual	.44
Gives opinion—Role playing	.37
Gives orientation—Actual	.36

The fifth factor we have named the *discussional involvement* factor. A group which is high on this factor is characterized by much discussion and debate with the interaction tending to be at an intellectual rather than an emotional level, although with undertones of verbal emotional response which

is dissipated immediately in tension release (i.e., horseplay eventuating into laughter). It is not accidental that these groups are high on mean I.Q. There is an interesting negative loading (absence) on giving and asking for orientation suggesting a quickly grasped or more or less tacit assumption, whether correctly or incorrectly based, of a common understanding of general purposes with most of the interaction going to discussion of differences on less general matter such as the suitability of specific ways and means. If the assumption of a common understanding of purposes is not correctly based, a high degree of negative response could be expected. In the role playing situation there is a heavy loading on both showing antagonism and showing solidarity, indicating the ready acceptance of the permissiveness of the situation.

FACTOR 5

Shows disagreement—Role playing	.78
Shows antagonism—Role playing	.69
Shows disagreement—Actual	.59
Shows tension release—Actual	.58
Gives suggestions—Actual	.54
Mean I.Q.	.49
Shows solidarity—Role playing	.46
Shows tension release—Role playing	.44
Gives suggestion—Role playing	.44
Gives orientation—Actual (absence)	—.44
Asks for orientation—Actual (absence)	—.34
Asks for suggestions—Role playing	.35

Factor six is provisionally called *task interest*. Groups high on this factor appear to manifest high preoccupation with the task in hand with a corresponding lack of interest in other aspects of group activity. The range of discrepancy in activity among the members is great, indicating a talker-listener arrangement. In both actual and role playing situations there is an appreciable loading on showing agreement. The high negative loading in

FACTOR 6

Shows tension release—Role playing (absence)	—.53
Total rate—range—Actual	.50
Shows agreement—Actual	.46
Shows agreement—Role playing	.34
Asks for suggestions—Actual	.34
Gives orientation—Actual	.31
Gives suggestions—Actual	.30
Total rate—Actual	.32

showing tension release for the role playing suggests that supportive responses are passive in nature. The asking for and giving suggestions, the giving orientation and the total rate of activity loadings in the actual behavior appear to indicate attention to the task.

Factor number seven may be called *maturity*. Maturity or experience, as reflected by age and military status, appears to be related to the character of interaction in the group. In the actual behavior situation there is a negative loading on showing tension and antagonism, and positive loading on showing agreement. This might be interpreted as suggesting that supportive reponses are emotionally neutral, and that interaction proceeds with a virtual absence of tension or hostility among the members.

The sign of the factor loading, for any given factor, may be reflected. It is frequently possible to improve understanding of a factor by viewing it as a bipolar continuum. This is particularly the case with factor seven. The polar reflection suggests a group composed of young and inexperienced persons who fail to acknowledge each other's responses, and who manifest tension and antagonism in the actual behavior situation. In the role playing situation they score high on stating opinions but fail to make suggestions.

FACTOR 7

Mean age	.93
Military grade	.91
Gives suggestion—Role playing	.51
Gives opinion—Role playing (absence)	—.43
Shows antagonism—Actual (absence)	—.38
Shows tension—Actual (absence)	—.37
Shows agreement—Actual	.33

DISCUSSION

The impressive fact concerning this treatment of the data is that a factor structure this well defined should be found. However, the authors have no inclination to regard the foregoing as a close approximation to resolving the problem of locating the general dimensions on which all groups may be assessed and compared. The results are highly suggestive and provide substantial support for the assumption that further research along the lines indicated will yield reliably defined general dimensions. In particular, a study designed with observations more sharply focused to test the hypotheses implied in the tentatively designated factors here identified, and the derivative hypotheses these suggest, would be a fruitful next step to this research.

Granting the provisional character of our findings, we may permit ourselves some freedom in preliminary interpretations as to the possible mean-

ing of the factors and their utility. In the first place the factors identified do indicate that these laboratory groups do manifest certain specifiable characteristics or dimensions of group behavior on the basis of which they may be assessed, classified, and compared in terms of their differential scores. In the second place these dimensions suggest themselves as having relevance for the description and classification of other than "artificial" laboratory experimental groups. For example, those who work with family groups will doubtless readily recognize the appropriateness of factors 1, 3, and 4 as important components in describing and comparing different families. Some families would seem to be marked by high loadings in factor 3 with strong identification and warmth in the relationship; others with high scores in factor 1 where much tension is present but where the interaction of the members is largely in terms of emotionally neutral expression; and still others where the relations are rather rigidly ordered and direction and control functions clearly defined. While these three factors are perhaps more obvious in their relevance for family group comparisons, the others are by no means irrelevant for such purposes.

To cite other possibilities, we can call attention to the wide variety of community organization groups whose profiles on these factors would indicate varying degrees of involvement and commitment or identification (factors 2 and 3), and where deliberate efforts are made to maximize these components; or to committees which show a high degree of discussional involvement (factor 5) and are short on leadership and structuring (factor 4), perhaps thus failing to get going on the performance of their assigned duties. Therapy groups sometimes, to the consternation of the therapist, insist on performing in the pattern suggested by factor 5 (discussional involvement at an intellectual level) and neglecting the emotional commitments required in such operations.

In our suggestions thus far we have stressed instances in which groups may be characterized by the predominance of one dimension or another. It is also clear that groups may be looked at as exhibiting characteristic profiles on the basis of which they may be classified and compared. Profile types may be assessed for their task efficiency, or their effects on personal characteristics of members, or with respect to any other criteria of interest to the investigator. Furthermore, it may be of interest to study changes in profile as the result of the application of various techniques in leadership and management, or in specific training of members in particular skills and capabilities in interpersonal behavior.

These illustrations will suffice to support our suggestion that if these

or similar sets of stable dimensions are identified, they will provide the basis for highly useful characterizations and classifications of groups for a wide variety of research application. Certainly it would appear that the present demonstration offers sufficient promise to warrant further work on better identification and definition of the factors and the discovery of additional ones.

Development of research along the lines indicated may be found in the literature, although the number of such researches are as yet very small. Cattell's two factor analyses stand as essentially the only researches of sizable proportions in this area (8, 9). These have been accompanied by consideration of theoretical problems for the classification of groups (5). The notion of classification of tasks, or of situations, has been involved in the research of Carter and his associates (3, 4). With the development of the concept of syntality, the notion of leadership as influence on group product has been given new vigor (6, 7, 10), and the feasibility of such direct research has been demonstrated by Haythorn (11). But these ingenious and productive researches do not exhaust the field, and the task which lies ahead is replication and extending the generality of the studies. To suggest at least one direction in which generality may be extended, we point out that group size is not considered in either the present study or those of Cattell. This whole area of investigation offers almost unlimited opportunities for an empirically derived theory of group behavior.

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PROBABILITY IN SOCIOMETRIC ANALYSIS

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A. INTRODUCTION

In this paper, we wish to review the various forms of probabilistic analysis in sociometry. While the concept of "tele" emerged, as a class-term describing a set of specific socio-emotional involvements among individuals, *because* factors other than chance were consistently seen operating (producing a surplus of mutualities, and more complex configurations), chance analysis has not lost its meaning or significance. Sociometrists have armed themselves with a group of rather powerful analytic tools (as Leo Katz puts it (6)). Among these the calculus of probability is not the least important one.

B. BASIC ASSUMPTIONS

Probabilistic analysis assumes—at least as of the end of 1955—that individuals may possibly be choosing each other *randomly*—or, as if by chance. Could one establish such randomness of choice-behavior, concepts such as "tele" would cease to be of value. But even though people do not relate to each other as-if-randomly, the idea of chance selections affords the sociometrists ways to express actual socio-emotional attachments as deviations from randomness.

The assumption of randomness merely implies that each specific sociometric event, such as "choice", "mutuality", "unreciprocation" is *equally* likely. Furthermore, we assume that each event can occur, and does occur, *independently* from other events of the same type. Thus one assumes that the choosing by individual A takes place independently of the choosing process of individual B, C, and so on.

Were individuals to relate to each other randomly, the probabilistic equations, and distributions, would describe sociometric configurations *ac-*

curately (within the limits of sampling, and observational errors only). In this sense, probabilistic analysis provides us with a set of *crude models* in terms of which the non-model behavior of individuals may be conveniently expressed.

As models, the probabilistic formulae are expected to hold for any population; hence, we need be concerned with a population of subjects, N, and a number of choices permitted to each individual, d, under a specific criterion, c.

C. Basic Definitions

Some of the fundamental solutions come from the early work of Moreno and Jennings (13) who credited Paul Lazarsfeld with providing the initial clue to this type of analysis.

If we have a population N in which each individual is given an opportunity to express 0, 1, 2 . . . d choices, the probability that any specific individual will choose any other specific individual is, of course

Eq. 1) $$p = \frac{d}{N-1}$$

and for a given number of criteria, c, the basic formulation as expressed by Joan Criswell is (4)

Eq. 1a) $$p_c = \frac{d.c}{(N-1)\ c}.$$

The probability that the event p, the choice by any individual of another individual, will not happen is then the complement,

Eq. 2) $$p = 1-p = 1-\frac{d}{N-1}.$$

By the law of joint probabilities, we may then obtain the probabilities of several dyadic relationships. The probability that while an individual chooses any other specific individual he will not be chosen by him—that is, the probability of an "unreciprocated" choice will be

Eq. 3) $$p_{ur} = pq$$

because for the event to occur, one individual must choose (probability p), while the other individual must not choose (probability q) the referent subject.

Similarly, for "mutualities" we have

Eq. 4) $$p_{mc} = p^2$$

for the event will happen only if one individual chooses another specific individual and is chosen, in turn, by him.

Next, the probability that two specific individuals will ignore each other (neither chooses the other one) can be expressed as

Eq. 5) $$p_{ind} = q^2.$$

D. Average Choice Expectations

In any population, at most $N^2 - N$ choices can occur; the sociomatrix will have $N^2 - N$ cells (since N individuals cannot, by definition, choose themselves).

The expected number of unreciprocated choices in a population then is given by

Eq. 6) $$E(Ur) = pq\ (N^2 - N).$$

The reasoning is obvious. The event of an "unreciprocation" can occur in 2 ways between, say, individuals A and B. A chooses B but B does not choose A; and A does not choose B while B chooses A. The total number of such dyads is $(N^2 - N)/2$ or C_N^2 (the number of ways in which two elements can be selected out of a class of N elements).

We expect that, on the average, mutual choices will have the frequency of

Eq. 7) $$E(Mc) = p^2\ C_N^2$$

by identical reasoning except for the fact that the event "mutuality" can occur only in *one way* (A chooses B and B chooses simultaneously A).

The average number of non-mutual choices (unreciprocations and mutual indifferences) will then be

Eq. 8) $$E(1 - Mc) = (1 - p^2)\ C_N^2.$$

The average number of indifference dyads (A does not choose B and B does not choose A) follows as

Eq. 9) $$E(Ind) = q^2\ (C_N).$$

Finally, we expect that, by chance, each individual will be chosen on the average with a frequency of

Eq. 10) $$E(CR_i) = (N - 1)\ p = n.p$$

where CR_i refers to Choices Received by any individual, i.

The standard deviation of the choice income will be

Eq. 11) $$\sigma = \sqrt{npq}.$$

E. Distribution of Choices.*

On the whole, any and each individual may be chosen 0, 1, 2, 3, . . . N — 1 times. The relevant probabilities are obtained from the Bernoulli series, from the expanded binomial of which they are the successive terms. Thus the probability of an individual receiving exactly r choices, where $r \lessgtr n$, is

Eq. 12) $$P_r = C_n^r \, q^{n-r} \, p^r$$

because the event presupposes that r individuals choose the referent subject, implying that (n — r) do not choose him. But these r-individuals can be any r individuals selected from among the (N — 1) = n individuals. The choice events can then happen in as many ways as r elements can be selected from among n elements.

(Eq. 12) is but one term of the binomial, and the expected distribution of 0, 1, 2 . . . N — 1 choices by individuals in a population N is then given as

Eq. 13) $$(q + p)^n = \sum_{x=0}^{n} C_n^x \, q^{n-x} \, p^x$$

where x is 0, then 1, then 2, and finally n.

Urie Bronfenbrenner (1) dealt with several approximations to the binomial. The approximation by the *normal curve* will be legitimate when p is about as large as q. When p or q are very small while n is large, the approximation by the Poisson is available. Pearson's tables (1934) of the Incomplete Beta Function facilitate the approximation by the beta function. The simplest approach—while Gram-Charlier series may also be employed—results from using areas under the *Type III Curve* tabulated by Salvosa.

The computational problem reduces to the evaluation of the (a) mean of the binomial, (b) its standard deviation, and (c) skewness of the distribution, thus

Eq. 14) $$M = n.p \qquad \text{(viz. Eq. 10)}$$

Eq. 15) $$\sigma = \sqrt{n.p.q.} \qquad \text{(viz. Eq. 11)}$$

Eq. 16) $$a_3 = \frac{q - p}{\sigma}.$$

* Originally Moreno & Jennings (13).

Finally, the deviation of the upper (or lower) limit of each class interval from the Binomial mean must be calculated,

Eq. 17) $$t = \frac{x - M}{\sigma}$$

where x is the limit of the choice interval, M the Binomial mean, and σ the standard deviation. The probabilities corresponding to each t determined by the skewness, α_3, have been tabulated.

This approximation is useful in computing *fiducial limits* of any choice distribution. We may be interested, for example, only in such choice frequencies which would occur by chance less than once in a hundred ($p \lessapprox .01$).

The appropriate value of t can then be substituted in the above equation (Eq. 17) and

Eq. 18) $$x = t\sigma - M.$$

This idea was utilized by Lemann and Solomon (10), who followed a suggestion by Frederick Mosteller, in the development of the *trivariate scatter* diagram for plotting the relative position of any individual with regard to the dimensions of positive, negative, and indifferent relationships.

When d, the number of choices allotted to each individual, is not preassigned, no satisfactory solution to the problem of probabilistic distribution of choices exists. Edwards (5) has suggested, however, that if judgments are received from all N members of the population with regard to all other members of the group, $N - 1$ in number, and if the trichotomy "like", "dislike" and "indifferent" is used (whose properties were discussed by Lazarsfeld (9)), any specific individual is likely to choose any other specific individual positively with a probability

Eq. 19) $$p = 1/3$$

while the event of negative choice, or that of indifference have a probability of

Eq. 20) $$q = 2/3.$$

Under such conditions, the probabilities that a specific individual receives 0, 1, 2 . . . $N - 1$ likes is given by the successive terms of $(2/3 + 1/3)^{N-1}$.

F. Distribution of Isolates

We may define an isolate as an individual who, under a specific criterion, receives no choices from the $N - 1$ members of the population. The prob-

ability that any given individual shall not have been chosen by any other individual is, of course,

Eq. 21) $$P_0 = (1-p)^n = q^n$$

which is the first term of the series of Eq. 13 when $x = 0$.

The chances that there will be exactly k-isolated individuals in a test population have been evaluated by Leo Katz (7). Thus

Eq. 22) $$P_k = \sum_{j=k}^{n-d-1} (-1)^{k+j} C_j^k S_j$$

where

Eq. 23) $$S_j = C_n^j (C_{n-j}^d)^j (C_{n-j-1}^d)^{n-j} (C_{n-1}^d)^{-n}.$$

Since the evaluation is quite tedious, Leo Katz has proposed an approximation with the use of the Poisson, the limiting distribution in this case.

The average number of isolates may be defined as

Eq. 24) $$E(\text{Isol.}) = N.\ q^n$$

with the variance

Eq. 25) $$= E(\text{Is}) \left[1 - (N-1-d)\left(1 - \frac{d}{N-2}\right)^{N-2} - E(\text{Is}) \right]$$

The exact approximation is given by

Eq. 26) $$P_k = e^{-\lambda k} \lambda/k\ !$$

where

Eq. 27) $$\lambda = N(1-d)/(N-1)^{N-1}.$$

This approximation applies for larger N; but the binomial may be used even for moderate N. The values of "n" and "p" are calculated,

Eq. 28) $$np = a_1 = E(\text{Is}) \qquad \text{(viz. Eq. 24)}$$

Eq. 29) $$1/n = 1 - \frac{a2}{a_1^2} = 1 - (-1/N)\left[\left(1 - \frac{d}{(N-2)\ (N-1-d)}\right) \right]^{N-2}$$

Since the resulting n need not be an integer, the largest integer in n will be taken and the binomial

Eq. 30) $(q + p)^n$ will yield probabilities that there will be exactly i-isolates.

The maximum possible number of isolates is

Eq. 31) $$P_{(N-1-d)} = C_N^{N-1-d} \frac{(d+1)^{N-1-d}}{(C_{N-1}^{d})^N}.$$

When the number of choices permitted to each individual, d, is not preassigned and the trichotomy "like", "dislike", "indifference" is used, the distribution of isolates was suggested by Edwards.

Eq. 32) $$P_i = \sum_{i=0}^{N} \left[(2/3)^{N-1} + 1 - (2/3)^{N-1} \right]^N.$$

G. Distribution of Mutualities

Criswell (3), Edwards (5), and Katz (8) have criticized Bronfenbrenner (1) correctly for suggesting a simple binomial for the distribution of mutual choices. The independence of mutualities cannot be assumed and sustained. The problem of the distribution of mutualities awaits yet a solution, although Katz has reported that progress is being made along these lines.

When the number of choices per individual is not preassigned, the assumption of independence holds and Edwards suggests that the distribution of mutualities is given by

Eq. 33) $$(1/9 + 8/9)C_N^2$$

in as much as at most C_N^2 mutualities can exist.

H. Complex Configurations

Paul Maucorps (11) followed Schuetzenberger (17) in evaluating the probability that three, and then four, individuals will form a triangle, and a square respectively. But the general problem of complex configurations was solved only relatively recently by Katz and his associates (6, 8).

We may think of k + 1 individuals as being connected with each other by k-links. Such a configuration (which may be obtained qualitatively by

raising sociomatrices to powers, specifically, for k-links to the k-th power) is a k-chain. If any two of the k + 1 individuals in the pattern coincide, we may speak of a redundant k-chain. When only the first and last individuals coincide, the chain is non-essentially redundant. The configurations are symmetric when the relations are reciprocal.

The expected number of one way k-paths is then

Eq. 34) $$E(\text{k-Paths}) = \frac{n\,!}{(n-k-1)\,!}\left(\frac{d}{n-1}\right)^k$$

and that of symmetric k-paths (A to B— and B to A, B to C— and C to B, C to D— and D to C)

Eq. 35)

$$E(\text{Symm.k-Paths}) = \frac{n\,!}{(n-1-k)!}\,\frac{1}{2}\left(\frac{d}{n-1}\right)^2\left[\frac{\frac{d\,!}{(d-2)!}}{\frac{(n-1)!}{(n-1-2)!}}\right]^{k-1}$$

The occurrence of one-way k-rings has an expected frequency of

Eq. 36) $$E(\text{k-rings}) = 1/k\,\frac{n\,!}{(n-k)!}\left(\frac{d}{n-1}\right)^k.$$

Next, symmetric k-rings can be evaluated from

Eq. 37)

$$E(\text{Symm.k-rings}) = 1/2(k)\,\frac{n\,!}{(n-k)!}\left[\frac{\frac{d\,!}{(d-2)!}}{\frac{(n-1)!}{(n-1-2)!}}\right]^k.$$

Finally, we may define a k-clique as a configuration in which each member chooses all others. The number of k-cliques to be expected is then obtained from

Eq. 38) $$E(\text{k-cliques}) = \frac{n\,!}{k\,!\,(n-k)!}\left[\frac{\frac{d\,!}{(d-k-1)!}}{\left\{\frac{(n-1)!}{(n-1)-(k-1)}\right\}!}\right]^k.$$

I. Intergroup Choices

If we now think of a population N as consisting of, say, two subgroups, a, and b, we may wish to evaluate the likelihood of inter-group choices relations, that is, choosing processes between members of subgroup a and those of subgroup b.

Following Joan Criswell (12), we expect that members of a will make among themselves

Eq. 39) $$E(CM_{a-a}) = \frac{a-1}{N-1}$$

proportion of choices. The likelihood that any of the a's will include in their choosing at least one of the b's will be

Eq. 40) $$P(CM_{a-b}) \; 1 \gtrless x = \frac{N-1-a-1}{N-1}.$$

Edwards (5) and this author (14) have discussed the specific probabilities that any member of a will choose 0, 1, 2 . . . d members in b. When r d, the probability that any specific member of a chooses exactly r members of b will be

Eq. 41) $$P_r = \frac{C_b^r \; C_{a-1}^{d-1}}{C_{N-1}^d}.$$

The successive terms of the multinomial may be used to compute the probabilities that all members of a will choose, among themselves, 0, 1, 2 . . . ad times into subgroup b.

The multinomial is

Eq. 42) $$(p_o + p_1x + p_2x^2 + \ldots\ldots + p_dx^d)^a.$$

In a recent article, we have proposed a simple operational procedure for evaluating this multinomial.

J. Conclusion

One discussion of probabilistic analysis has been motivated largely by the desire to bring together presently available techniques of computation. No such survey is known to us to exist in the English literature, although this author has reported the techniques in Koelner Zeitschrift fuer Soziologie for use of the German speaking behavioral scientists (15).

In their chapter, Loomis and Proctor (16) have included a brief con-

sideration of probabilistic analysis. Moreno in *Who Shall Survive?* 1953 edition gives a few of the procedures (12).

Let now the purposes of probabilistic analysis be briefly summarized:

(a) The probabilistic equations are *models* of choice processes when randomness of choosing is assumed.

(b) Actual choice behavior of subjects can then be expressed in terms of deviations from these simple models.

(c) The present state of probabilistic analysis calls for further refinements; specifically, it may become possible to alter the models by inclusion of empirically determined parameters of choosing (if such parameters—or functions!—are determinable at all) so as to modify the unrealistic assumption of independence of choosing, as well as that of "equal likelihood" of each choice.

The present "models" are *measuring sticks* of the manner in which human beings do not behave in an as-if-by-chance fashion. The models we would like to see developed will have to be predictive: aiming, instead of at rejecting the null-hypothesis (and establishing the presence of some intervening factors), at accepting the null hypothesis—of lack of significant differences between predictions provided by the models and actual choosing of individuals. But this, in the realm of human behavior, may be a task impossible to accomplish. Nevertheless, it is one worth trying for.

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THE TRANSACT MODEL

A PREDICTABLE AND TESTABLE THEORY OF SOCIAL ACTION, INTERACTION AND ROLE-ACTION

STUART CARTER DODD

I. PREVIEW OF THE MODEL—AN OPERATIONAL DEFINITION

This paper outlines our general transact model in six dimensions as an operationally defined and testable theory of social action. It is intended to go beyond the current description of social behavior by developing the predicting of it.[1] "Predicting" here broadly includes: a) forecasting in time, b) estimating from samples to parent populations, and c) inferring from independent to dependent variables. This means, in general, inducing and deducing from a known part to an unknown whole along as many dimensions as possible. Our theory specifies empirical and rational operations, as spelled out in the five sections below, *to improve the predicting of social action.*

[1] This predictive transact model using six dimensions is a specific outgrowth from our earlier purely methodological "S-theory" based on four dimensions as presented in *Dimensions of Society* (Ref. 4) which was developed with more substantive content but still as a largely descriptive and not a predictive system in *Systematic Social Science* (Ref. 5).

This model for any transact (which is our name for an act-in-context when observed in six dimensions) will be developed below, under the five steps in scientific modelling, these specifying testable propositions about:

(1) its variables—seeking the most general set of categories for predicting repetitive human behavior;
(2) its pre-conditions—seeking the most general hypotheses of relationship among those variables;
(3) its formulas—deducing solely from those variables and pre-conditions the model proper for predicting any social action taken as criterion;
(4) its experiments—seeking technics to isolate the model and the criterion with all other variables controlled;
(5) its fits—seeking statistical indices measuring the predictivity of the model under controlled conditions.

As a foretaste of this development, our transact model can be simply previewed as a typical operational definition in the following sentence: Any social behavior is best predicted by an earlier transact in six dimensions which means telling, in reproducible terms, six kinds of facts, each in three tenses, namely: ***Who did, does, and will do what, when and where, why and how, about that criterion behavior.***[2]

II. Categories for Social Action—The Variables

A. *Six "Factors"*

In building comprehensive theories the problem of what set of fundamental categories to adopt has concerned the systematizing philosophers and scientists alike. Aristotle had ten categories. Kant had four (quality, quantity, relation, and modality) which subdivided into twelve. Physicists can convert all their formulas into five dimensions (space, time, mass, temperature, and electric charge). Sociologists have proposed simple sets such as LePlay's "folk, place, work," or Eubank's "societary composition, causation, change, and culture." Von Wiese, Sorokin, Parsons, have elaborated larger and less definitely bounded sets of categories. Authors of textbooks in chapter and section headings use sets of organizing concepts that specify subfields such as: "demography," "ecology," "interaction," "institutions," "rural

[2] The amount of detail and technical language in an operational definition thus depends in part on the hearer for whom the definition is pitched. This brief presentation in this paper is pitched from pretests on six graduate students or journal editors to be reproducible by sociologists who have some statistical and semantic training.

communities," "change," "social problems," "disorganization," "culture," "collective behavior," etc. Seldom are these classifications analyzed by the canons of classification so as to be a minimum non-overlapping set whose subclasses and combinations can subsume all other concepts in sociology. Longer lists of concepts have been offered by Eubank and by a Committee of the American Sociological Society seeking to standardize the first course in sociology (Ref. 3).

In *Dimensions of Society* (Refs. 4, 5) four categories, called "sectors," were taken as *people* (P) in *time* (T) and *space* (L, a length), with *indicators* (I) of all residual characteristics of the people or of their environment. These four top level classes of variables, especially the indicators, were then sub-classified as finely or to as many levels as needed. Two sub-indicators of desiring (D) and of desiderata (i.e., objects of value, V) were also distinguished and treated at length because of their importance in the social sciences. The sub-classes and combinations of these six categories (T, I, L, P, D, V) were shown in descriptive formulas to redefine some five hundred of the most-used concepts in sociology. Later in *Revere Studies on Interaction* (Ref. 17) the "desiring" category was broadened to "behavior" or acts (A), since all behavior can be viewed as indicating some degree of desire (whether conscious or not) for whatever that behavior satisfies. This set of *six* categories we call *"factors"* of a transaction both to avoid confusion with the *four "sectors"* and to denote that they form a logical *product* rather than a mere sum or set of categories. Among these six categories we have come to put the "acts" in the central position since we study social action and take the other five as context of the act. A transaction or set of transacts here is an action-in-contest, a behavior observed as part of a whole situation. Our meaning of Dewey's term "transaction" is more exactly defined by specifying the six standard factors of the context. These six necessarily present factors specify what is taken as the "whole situation" of which any act at issue is a part. This means that the content of our transact theory, the variables studied, are *"the probable behavior and the values of people in a context of time, space, and other circumstances.* This may be paraphrased in many ways in order to transcend any one phrasing. Thus we also say that a transaction datum is an explicit record of an action analyzable into a set of all-or-none acts (including the degrees of an action) and distributed by actors, by their wants or values, by time, by places, and by any other circumstances.

The logical product (i.e., joint occurrence) of these six factors of actions, people, time, space, values, and all the residual circumstances (= C) is

our definition of a transaction.[3] It is an action taken jointly with its context of actors and of temporal, spatial, motivational, and all other observed circumstances. In interrogative phrasing a transact answers the questions: Who? does what? when? and where? why? and how? The "unit transact" is any all-or-none act of one actor, at one time and place, for one value or want, and at one point of each other relevant circumstance. The unit-transact can be enlarged along any of its six dimensions. Thus a "larger" transaction might be "50 men working 100 days mending a mile of road for X dollars of total wages during the winter in wartime." A still larger and less definite transaction might be: "All the activities of the inhabitants of town X during one year under whatever motivating and other circumstances existed there." A precise and predictable transaction might be our experiment on logistic message diffusion. Here the transact specified as "telling a news item as people meet in pairs at a steady rate and with equal opportunity" fully predicts a logistic S-shaped growth curve of news diffusion (as expanded below). A transaction is thus some behavior so comprehensively observed as to include all aspects of its attendant situation insofar as these aspects help to predict the later criterion behavior. The testable proposition summarizing this substantive part of our transact model might

[3] The dimensional formula for a complete "transactance" (which is an index of the behavior-in-context (B_e) as expected or predicted by the six factors) is thus the product:

$$\left[B_e \overset{\text{def.}}{=} A^a P^p T^t L^l V^v C^c \right] \text{ Eq. 1 the transactance}$$

The difference between a dimensional formula and a statistical formula should be noted—Eq. 1 in square brackets is the former; Eq. 2 in Table 1 is the latter. Dimensional formulas in three levels are "sums of products of powers of factors basic to a field of science." This is the physicist's definition (Ref. 2) and ours for sociology (Ref. 4, 5, 17). (Though we also use "4-level formulas" specified as "sets of sums of products of powers of factors.") A dimensional formula specifies the factors and exponents only, omitting the three other facets of classes, degrees, and cases which a statistical formula may also specify. Dimensional formulas thus show the *shapes* of curves when graphed, omitting details of size of *units* and of intercepts from the *origin point* which our prescripts specify for statistical formulas. Dimensional formulas are useful for classifying families of curves; statistical formulas are more useful for computing individual members of such families.

A still more complete and useful set of eight categories is formed by taking all material things (things having mass) and symbols (words, numbers, records) out of the residual class, C, and using them as compound categories coordinate with the other six. We call this set of eight categories "type-parts" in order to avoid collision with the subset of six factors and further subset of four sectors (Ref. 14).

be stated as: Any behavior of a large population will be better predicted in general from these six categories of variables than from single ones or subsets of these six. Each category is expected in most situations to improve the predicting in some way or in some degree.

B. *Four "Facets" of Each Factor*

Each factor has four "facets"' or aspects. These are:

(1) its *power-level* specified by an algebraic exponent (such as the powers of a population, namely: P^0 denoting a person, P^1 a plurel of actors, P^2 a group of pair interactors, P^3 an organization of role-actors (Ref. 7));

(2) its *classes* or many varieties (such as men, women, children, in a population; feeling, knowing, doing, modes of speech behavior; positive, neutral, and negative values; etc.);

(3) its *degrees* or amounts (whether in all-or-none, ordinal, or cardinal terms);

(4) its *cases* or elemental points (such as a person, an act, an instance of an average amount of a desideratum, a date, a spot, a score, etc.).

A fuller notion of these 24 facets of the six factors may be had from studying Table 1 which lists some three sample alternatives for each facet of each factor of any transact. For further detail of how these four facets were derived, how they are specified by scripts at the four corners of a base letter in our interdisciplinary and standardizing "S-notation," and how they work to give the six factors enormous flexibility and coverage of social situations, the reader is referred to the two systematic volumes, *Dimensions of Society* and *Systematic Social Science*. Table 1 suggests the vast number of situations that can be described or symbolized by the orderly combinations of just six factors and their four facets each with three or four of their many possible subdivisions. Actually this number of combinations of items in Table 1 works out to millions of millions. This would seem more than are needed to symbolize the social situations of society for some time to come.

A summarizing and testable proposition for this facets part of the transact model might be: Earlier transacts will predict later transacts, or criterion behaviors, in general, best when their facets have been adequately specified and appropriately used.

C. *Translation of Categories between Systems*

In choosing basic categories to systematize a science one seeks as few or simple a set as will describe the whole field. For this, one seeks categories

which can subsume or translate most other concepts from those in daily use up to those of rival systems of the upper range.[4]

Just how can categories be translated? The answer is: By finding their meaning(s) in common (which are their logical product or "intersect" as Boolean algebra calls the members-in-common of two classes). Let an example from the field of communication theory illustrate. In communications a standard frame of reference is to ask: Who says what to whom, how, and with what effect? Let this sentence be rearranged as: Who with whom (actor and reactor) says what with what effect (acts and reacts) how (residual circumstances, mostly means). This indicates that the words in this statement coincide in meaning with our factors of *people acting in circumstances* when people are cross-classified as actors and reactors (developing their second "power-level"—see Table 1, Row 1, Col. 1, line 3, "a group," P^2).

More sociological translation[5] of categories may be found in the author's two volumes (Refs. 4, 5). *These translate five hundred sociological concepts into transact terms in some five hundred definitional equations. These descriptive formulas only lack the specifying of pre-conditions to become cal-*

[4] For systematic terminology we use:
an "act" for any behavior observed as all-or-none
an "action" for any compound of acts, including a behavior in degrees
an "actor" for any human doer
an "acting" for any on-going act (present active participle)
an "activity" for any set of actions and actings
an "actance" for any product of the factors when taken as a predictor of a criterion behavior
a "unit-act" for an instance of any act of one person at one time and place and at one degree of each motivation and residual circumstance
a "react" for any response of a reactor to an act
a "contact" for a one-way act by A and react by B
an "interact" for any product (i.e., joint occurrence) of an act and a react and its reverse; a two-way contact as when A acts, B reacts by an act to which A then reacts
a "role-act" for any act of a specialist or role-actor
a "transact" for an act-in-context of its five further factors, i.e., any behavior when explicitly distributed in the six dimensions of any "total situation"
a "partid transact" for any transact with some of its dimensions controlled, i.e., observed at just one point
a "counter-act" for any conflicting act cancelling a given act
a combination of a prefix with a suffix, e.g., "transactance" for a predicter-act-in-context; "interactance" for a predicter index of interacts, etc.

[5] In a companion paper, Professor A. A. Lundberg marshalls convergences in the categories used in the systems of Parsons, Bales, and Dodd.

culative and predictive formulas. Such specifying of pre-conditions is the next step in modelling and is developed in the next section.

III. Pre-Conditions Connecting the Factors—The Hypotheses

To convert descriptive and classificative formulas into calculative and predictive formulas called models, requires specifying the pre-conditions or hypothesized relations which connect the variables to each other. (Out of all the interconnecting conditions that may exist those that are known and specified in the model we call the "pre-conditions.")

A. *Probability Pre-conditions*

For this requirement in modelling we propose using *probability conditions* as a general base line. *Wherever more special conditions connecting the factors are not known,* transact models will use probabilistic pre-conditions as a base line. Then all the many overlaying variables which produce systematic or non-random deviations from that base line can be better isolated, measured, and progressively built into fuller models.

Let the simplest possible transact illustrate a bit of what a base line of probabilistic conditions mean. Consider any human behavior observed as an all-or-none act, A (= 1, 0), among P people at one time, place, motivation, and residual set of circumstances. Suppose the act is "hearing a news item" which is universal to all cultures and easily measured by counting the knowers of the item. Taking the act as all-or-none means that we assume or create a dichotomous distribution as the relation of the acts to the people. From this all-or-none condition one can deduce seven "laws" of elementary probability by computing the statistical moments or average powers of the index of the act.[6] These probability principles are known as "simple probabil-

[6] The general formula for a discrete statistical moment, $\overline{A^m} \overset{\text{def.}}{=} \sum_1^P A^m/P$ Eq. 3 about zero computed for any exponent or power of the attribute, A, gives p, the proportion or simple probability of knowers in that population, i.e., $\sum A^m/P = p$ if A = 1,0 for any m. Similarly every moment, about zero, of not-A gives q, the proportion of non-knowers of the news item. Then the central moments (about the mean, p) yield in simplest form (Ref. 16):

Zeroth moment $= \overline{A^0} = p + q$, an alternative probability, asserting "A or not-A"
First moment $= \overline{A^1} = o$, a nul probability, asserting "neither A nor not-A"
Second moment $= \overline{A^2} = pq$, a joint probability, asserting "both A and not-A"
Third moment $= \overline{A^3} = q - p$, a difference probability, asserting "not-A without A"
Fourth moment $= \overline{A^4} = 1/pq$, an inverse of a joint probability, asserting "all not both A and not-A"

ity," "complementary probability," "alternative probability," "nul probability," "joint probability," "difference probability," and "the inverse of the joint probability." Which of these seven probability principles holds depends not at all on the acts of these people but solely on the researcher's response to them. If he observes and counts the knowers, he thereby computes the simple probability, p, of being a knower; if he observes the non-knowers, he then computes the complementary probability, q. If he observes "either," he computes the alternative probability, $p + q$ $(= 1)$; if he observes "neither," he gets the nul probability, 0; if he observes "both," (as when knowers and non-knowers meet during a period of time in conversational pairs and some pairs contain both) he gets a joint probability, pq. Thus the researcher's conditions, or choice of what to observe, determines what probability formula describes and will "predict" the result of his observing. The transact model specified as "the statistical moment of any order of an all-or-none act" will measure the outcome of his observations in general and will measure the outcome more particularly depending on whether he observes "one," "the other," "either," "neither," "both," "one but not the other," or "all not both."

Next let this partial transact involving only the dimensions of acts and people be enlarged to include the time factor. Let it illustrate how to predict the growth of an act in a population during a period under conditions of elementary probability. The relation of the acts to time is here assumed to be a steady one for the simplest case at first. (This means a rectangular distribution of the acts over the successive unit periods.) From this condition of a steady speed of acting, the formulas, mathematically deduced (as by integrating the probabilities over time), enable one to predict that the growth of the act or diffusing of news items will tend to follow:

(1) a normal probability distribution of news items known after t days (if a random half of the people hear one new item each day); or
(2) an exponential growth curve of knowers (if one and the same item is heard with equal opportunity for all each day); or
(3) a logistic S-shaped growth curve of knowers (if one item spreads with equal opportunity from person to person as through conversational pairs).

Which of these three growth curves or mathematical "laws" is followed depends essentially upon whether the acts are observed as alternative probabilities among persons—predicting a normal probability curve; or as a simple probability in a plurel—predicting an exponential curve; or as a joint probability in a group (of dyads)—predicting a logistic curve.

All three growth curves for diffusing here depend alike on the two conditions of random and steady distribution of the acts in the population and period. If the steadiness condition changes, an altered model results; if the randomness condition changes, the model must change to match.

But just what is meant by the word "randomness?" The layman thinks of a random distribution as one given "by chance," "by lot," "by pitching pennies." Philosophers have long searched for the bases of "probability"—is it an empirically observable frequency or an intuitive degree of belief? Statisticians think of probability as a relative frequency of one kind of event, the proportion of times it occurred in some past series of possible occurrences. The mathematical statistician refines this as the limiting proportion in infinitely many samples. Building on the frequency concept of probability, sampling theory, actuarial practice and a host of highly successful and predictive applications of probability theory have grown up in the physical, biological, and social sciences.[7]

Our transact theory proposes to weave probability into the warp and woof of social theory and not use it merely as an afterthought when testing the significance level of some finding. We use a probability, which is but the mean all-or-none behavior in a large statistical population, as used throughout the natural sciences. We apply probability principles to the mass prediction of social action because from past experience probabilities mean by definition what is most likely to happen in the future under like conditions. We expect in life situations that elementary probabilities will be greatly compounded and structured, that they will be often unstable and hard to unravel. But we further expect as a major working hypothesis in trying to systematize sociology that by operating with probabilities in modelling we can get on with building an experimentally based and predictive science of interhuman behavior.

Note the three tenses of the operational definition of the word "random." As the past tense of any instance of it, randomness may have been generated as a controlled artefact by drawing lots or by a table of random numbers. Alternatively, it can arise naturally from *many small uncorrelated* influences. In any situation in proportion as we control, or strip off the variation of, the few, large correlated and visible influences, we get nearer

[7] Note especially in mathematical-physiological-psychology, Ross Ashby's *Design for a Brain* (Ref. 1), which expects an adaptive system to arise best from 1) *many* 2) *part and* 3) *step functions* 4) *randomly combined.* We see our transact theory based on random combinings of elements among our factors as spelling out a possible base of the adaptive system we call "human society."

to a homogeneous or purely random "base-line" situation. Thus consider our logistic interaction experiment in a classroom described below which assumes just three conditions, namely: 1) *random* 2) steady 3) pairing. Here the experimenter tries to hold constant: 1) the kind and amount of the acts (held constant by doing nothing but telling and hearing news items throughout the experiment), 2) the set of actors (held constant as the same students), 3) the time, and 4) the space (held constant in one class period and room), 5) the motivation (held constant at "sufficient willingness to interact as instructed"), and 6) all the visible residual influences on interacting such as a) sex differences (held constant by using one sex only), b) friendships (held constant by using all strangers), c) subtly sensed congeniality perceived from dress, expressions, or conduct (held constant perhaps by darkening the room). Insofar as the experimenter controls these factors (which are experimentally known to correlate with the interaction), then whatever further residual influences determine who meets whom when choosing partners "at will" may be expected to be highly random. They seem due to the residual many, small, diverse, and as yet undetectable influences in one's nervous system whose aggregate effect in a set of persons we call chance.

As the operational definition of randomness in the present tense, there are all the statistician's parametric and non-parametric tests for identifying degrees of probability in diverse statistical structurings. These sampling indices, together with appropriate descriptive indices of correlation and the like, can tell us the probable contribution of each factor (at its given facets within the data in hand) in predicting the criterion behavior. These indices can further tell us the share of the residual unknown or random elements—challenging to further research.

The operational definition of randomness in its future tense as its uses or adaptations is only beginning to be realized by sociologists. For randomness can mean social *equality of opportunity* in specified respects. When the poller selects a randomized sample, he has given every person in that universe a mathematically equal opportunity in respect to being drawn. Randomness is thus close to the heart of a democracy insofar as that word of many meanings means *equality of opportunity* in specified respects for its citizens in some of its political, or economic, or other institutions. Randomness can thus be viewed as the absence of biasses, causes, restraints, or anything making for inequality or visible "lumps" of causation in specified respects in the population at issue. Thus if the p knowers of a news item interact randomly with the q non-knowers, the law of joint probability expects that their product, pq, will represent the proportion of knower-non-knower

meetings where diffusing of news can go on. So the expected increment in a unit period is pq under the condition of randomness or equal opportunity *to interact*. This may be paraphrased *in respect to the interacting at issue* as "a homogeneous population" or "an extremely and atomistically heterogeneous population" or "thorough mixing" or "meetings with equal opportunity" or "democratic equality" or "most probable interacting" or "random pairing," or "chance meetings" or a "situation without biases, restraints, or any structuring," or an "equalitarian condition." "Randomness" can be viewed as an operationally specifiable word for that part of the ideal of democracy, socialism, communism, Christianity, Islam, justice, fraternity, or any concept or creed insofar as it stands for *equality of people* before the law or "in the eyes of God," or in other specified respects.

A summarizing and testable proposition of a substantive sort for this probabilistic pre-condition part of the transact model might be: Insofar as the measurable correlates of the criterion are held constant, the residual variation of the criterion will tend to be predicted best by the laws of chance.

B. *The Product Pre-Condition*

In addition to probabilistic pre-conditions, a second essential pre-condition in our transact model of social action is that the basic factors are combined by multiplication, not addition. A transact is a product of factors, not a sum of addends. The acts, actors, values, time, space, and residual circumstances are *factors* combining in some form of logical or mathematical product. Depending on whether they are observed qualitatively or quantitatively, their product may be a logical product asserting joint existence (whereas a logical sum asserts alternative existence) or an algebraic product including product-moments or correlations, set products, scalar products of vectors, matrix products, etc. The justification for assuming a transact to be a product and not a sum of its six basic categories is the "vanishing result" test. A product vanishes if any factor vanishes (i.e., becomes zero), whereas a sum does not. Every transact must vanish if there is no act, or no actor, no finite time or place, no causation, and no material or symbolic context of any sort. Each category may have many alternative forms which are logical sums, but since each category must exist in some form in any transact (defined as an act-in-context), the category must be a factor in a product. This definition of a transact as a product results in transacts being highly unitary situations with interworking parts that modify each other and often create new emergent wholes. Mere sums or aggregates of the same parts do not interwork and so form a looser unity like a pile of stones.

Transacts (products) correspond somewhat to molecules in chemistry since molecules are always formularized as products of atoms (whereas chemists write a sum to denote a mere physical mixture, not a chemical union). Furthermore, combining the basic variables in transacts in the appropriate form of product can be shown experimentally to improve predictive correlations with the criterion behavior dramatically.[8] This expectation is a testable hypothesis summarizing the "product pre-condition" of the transact model.

IV. Formulas Deduced from Categories and Pre-Conditions

The third step in our modelling deduces a calculative and predictive formula by taking the general descriptive formula and qualifying or restricting it to the case of the specific pre-conditions that are assumed in any model at issue. The most general descriptive formula in our system[9] says that any recorded social situation whatever is symbolizable by some set of variables, their four facets (specified in the corner scripts) and any operators. Since this formula, by definition, can describe any recorded set of data whatever, it does not predict any specific situation until some pre-conditions are specified and these limit Eq. 4 to more specific values for the range of its symbols.

Thus suppose the simple pre-conditions sketched above for studying an all-or-none act are chosen. Let us choose to study, as an example, the probable spreading of an all-or-none act such as a news item diffusing from

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[8] Thus, for example, the logistic predicts growth of diffusion in each unit-period by using the product, pq, not the sum, p + q, because interacting and not alternative acting is going on. The product will always correlate (aside from sampling error) at unity (r = 1.0) with the data of diffusing under pre-conditions of random, steady, pairing; while the sum will always correlate at zero (r = 0) in identical data. For the sum (p + q = 1) is a constant and will always correlate at 0 with any variable. Experimentally and rationally a model adding the variables is here worthless for prediction, while a model multiplying the identical variables predicts perfectly. Merely treating identical data here as either a sum or a product results in the worst possible or best possible predictivity. Such excellent predictivity in social science requires models for formulating it rigorously.

[9] $S \overset{\text{def.}}{=} {}^{s}_{s};X^{s}_{s}$ general descripted formula Eq. 4

where S means a name for any recorded data or set of symbols on the right-hand side
X means any variables
$^{s}_{s}$; means the four corner scripts specifying the four facets of each factor
; means any logical or mathematical operator such as + — × ÷ etc.

person to person in a specified population and period. Let us choose 1) pairing off 2) randomly and 3) steadily as three base line pre-conditions connecting these three factors of an act, actors, and time. Then the formula as derived from these pre-conditions will be the simplest logistic curve (Refs. 7, 10, 12, 15). This illustrative formula cumulates the most probable increments of new hearers, pq, in successive unit periods. It is one example among many of a formula predicting the course of some social behavior (here the conversational spreading of gossip, rumor, or news) under specified pre-conditions (here of random, steady, pairing). Note that these pre-conditions are irrespective of personalities, the situation, or the culture. They are universally statable pre-conditions, applicable to men, mice, or molecules alike. The model can apply in any science. Note further that "pre-conditions" in this paper do not mean further circumstancing variables (the C in Eq. 1 and 2). "Pre-conditions" mean *relations* such as forms of distribution between variables. Thus "pairing" means a dyadic *relation* of population elements; while "random" and "steady" denote rectangular distributions of the act in the population or in time.

Before discussing the experimental testing of this illustrative logistic formula, let us note the vast range of possibilities opened up to the experimental social scientist by converting descriptive formulas such as in our *Dimensions of Society* into predictive models. Conceivably any repetitive social phenomena can be modelled, given sufficient ingenuity (whether or not we can control things well enough to test them). And all science is limited to the repetitive, to classes of phenomena, leaving to history and literature the study of the unique. Already our moment-powers model has been generalized to a "powers" model which begins to specify the pre-conditions under which human behavior may be expected to follow (or can be predicted by) linear, logarithmic, hyperbolic, parabolic, and other common curves, as well as the normal, exponential and logistic curves sketched above for diffusing an act among persons, plurels, or groups.[10]

V. Experiments Testing the Fit of the Formula—The Tests

To test probabilistic models by controlled experiments on people one devises situations which hold every known factor, except the factor-at-issue,

[10] This "powers model" described elsewhere (Refs. 13, 15, 16, 17) is:

$$B_e \overset{\text{def.}}{=} \frac{p^m}{\Sigma t^a} A \qquad \text{Eq. 7}$$

which operationally defines (for calculation and prediction) the normal, exponential and logistic curves according as a and t denote one or more acts and as m is 0, 1, or 2.

constant at some one amount. This tries to achieve the goal of leaving only the one independent factor-at-issue to vary along with the residual many, small, uncorrelated and currently undetectable influences operating. Then these become increasingly predictable by pure probability considerations—and testable similarly by probability theory.

Thus in studying social diffusion to get at some laws or predictive generalizations of culture growth, the Washington Public Opinion Laboratory has experimented extensively on the simple logistic model of diffusing behavior (Refs. 8, 11, 13). Experiments isolated and either indicated or measured the effects on diffusing (defined by the changing percent of message knowers) of all six of the factors and their four facets.[11] In short, we observed or in some cases believed from experience that diffusion could be altered by any of these twenty-four influences, some of them subdivisible much further. We further have not found and cannot conceive of any influences on diffusion which are not subsumable within these twenty-four factors and facets (as a result of defining the residual category, C). This means that all our six basic factors of a transact and each factor with its four facets, *and nothing else,* were potential influencers of the diffusion to be predicted. All twenty-four "factor-facets" must be controlled or held constant by our model. This is the sort of complexity which has often been urged as preventing sociology from becoming an experimental or exact science. *Yet every one of these twenty-four factors and facets was perfectly controlled in a simple classroom experiment repeatable by any instructor at any time.* This published experiment (Refs. 13, 15, 17) on logistic diffusion of an act achieved demonstrable 100 percent control of all these twenty-four influences so that *the specified pre-conditions of random steady pairing existed fully and solely.* By getting twenty students to pair off by lot in each of ten one-minute periods and tell their partners all the news items (such as each other's birth dates) which each had heard during these pair-meetings, the diffusion (measured by the percent of knowers) grew, minute by minute, in an S-shaped logistic curve—just as predicted beforehand on the blackboard. The correlation of increments in the observed fact with the expected increments by logistic theory was r = .99.* The small dis-

* The equation for the simple logistic in recursive form is:

$$p_{t+1} = p_t + p_t q_t \qquad \text{Eq. 5}$$

where p = the knower proportion or mean of all-or-none act of "hearing the news item,"
q = the non-knowers, and
t = each time period in turn.

11 These twenty-four factor-and-facets may be spelled out in the definitional Eq. 6 as follows:

1 the power-level of observing the act $= A^{a}.$
2 the number of different acts $= A_{a}.$
3 the degrees of each act $= {}_{a}A.$
4 the boundaries of each act $= {}^{a}A.$

$= {}^{a\ a}_{a\ a}A. =$ the four facets of the acts factor

5 the powers of the people (as persons P^{0}, plurels P^{1}, groups P^{2}) $= P^{p}.$
6 the different kinds of plurels $= P_{p}.$
7 the number of people $= {}_{p}P.$
8 the presence of deviant persons $= {}^{p}P.$

$= {}^{p\ p}_{p\ p}P. =$ the four facets of the population factor

9 the power-level of the value, i.e., satisfactory frequency, mean, and dispersion $= V^{v}.$
10 the kinds of values, i.e., motives to interact here $= V_{v}.$
11 the degree of each value $= {}_{v}V.$
12 the threshold and limits of the value $= {}^{v}V.$

$= {}^{v\ v}_{v\ v}V. =$ the four facets of the values factor

13 power-levels of the time factor, i.e., instants T^{0}, durations T^{+1}, speeds T^{-1}, and celerations T^{-2} of acting $= T^{t}.$
14 the patterning of the periods $= T_{t}.$
15 the units of time $= {}_{t}T.$
16 the initial and terminal instants $= {}^{t}T.$

$= {}^{t\ t}_{t\ t}T. =$ the four facets of the time factor

17 the powers of space (involving locations, distances, or areas) $= L^{l}.$
18 the kinds of space, i.e., its homogeniety or absence of barriers $= L_{l}.$
19 the amouts of distance between actors $= {}_{l}L.$
20 the initial location of actors $= {}^{l}L.$

$= {}^{l\ l}_{l\ l}L. =$ the four facets of the space factor

21 power-levels of specified circumstances (i.e., qualitatively, quantitatively, or correlationally observed) $= C^{c}.$
22 classes of circumstances (e.g., sex, friendships, willingness to interact) $= C_{c}.$
23 degrees of each circumstance $= {}_{c}C.$
24 limits, etc. of each circumstance $= {}^{c}C.$

$= {}^{c\ c}_{c\ c}C. =$ the four facets

def. ${}^{s\ s}_{s\ s}X =$ Eq. 6 = the factors and facets of a transact, an expanded example of Eqs. 1, 2, 4

crepancies from the model were random ones as indicated by a non-significant chi square test at the 5 percent level. Here, we submit, in this checkable illustrative social experiment is a promise that transact models can help to build an experimentally based, increasingly exact, and predictive science of sociology.

SOME NEW TOOLS OF STATISTICAL ANALYSIS AND SOME NEW APPLICATIONS OF OLDER TOOLS

F. Stuart Chapin

Introduction

The purpose of this brief article is to suggest and illustrate leads to statistical analysis that new methods or new applications of older methods bring to mind; no attempt is made to give a bibliography of each topic; we cite only the sources of examples which illustrate specific applications to research problems of method. To this end some problems of classification are examined in terms of Chi-square, discriminant functions and the distance function (D^2); the usual analysis of variance is compared with non-parametric or distribution-free analysis of variance for application to problems of experimental designs aimed at the evaluation of community experiments; time studies by use of stochastic difference equations; and brief reference to the new extreme value theory.

The Problem of Classification of Social Data Into Groups

One of the earliest, and still one of the most useful statistical devices to test the logical soundness of any system of classification against the data of relevant psycho-social observations, is Chi-square.[1] In using this test we should be satisfied that the observations as frequencies in the cells of the table are independent. We need to know that the frequencies in each cell are all-inclusive, i.e., each cell contains all cases of this class; and the frequencies in the cells are mutually exclusive, i.e., no two or more cells contain any observations or cases in common. When these conditions of independence are met, then it follows that any obtained differences between the observed frequencies and the expected or theoretical frequencies in the cells

[1] A. E. Treloar, *Elements of Statistical Reasoning*, Wiley, 1939, pp. 210-226, gives an unusually clear and logical account of Chi-square.

of the table are a test of the independence of the categories of classification that have been used.[2] For example, suppose we have a 2 x 3 table, in which we wish to test the classification of single persons by sex (two classes) against the classification of the same cases by three income classes (under $5,000, $5,000 to $9,999, and $10,000 and over); any cell of the table is then independent of the other five cells, since all single men with incomes under $5,000 appear only in that cell, etc. By Chi-square we may determine the probability level, or the level of chance occurrence, of the departures of the observed cell frequencies from the expected or theoretical cell frequencies. In general, the over-all total of such a table (the sum of sums of column and row frequencies) should not be less than 50 cases for reliable results,[3] and 100 cases would be a better total. Furthermore, no cell frequency expected theoretically should have less than 5 cases,[4] and such a lower limit might better be 10 cases. So much for one application of Chi-square, but as we shall presently see, Chi-square is now also used effectively in non-parametric analysis of variance.

The serious research student would do well to form an acquaintance with the applications of Boolean algebra[5] to problems of classification into groups, sub-groups and over-lapping groups, etc. Using Boolean algebra it is possible to detect fallacies in verbal statements which purport to describe or to make inferences from systems of classification, fallacies which may occur in unsuspected redundancies or in inconsistencies hidden in verbal statements. Thus Berkeley[6] illustrates how Boolean algebra is used to disclose a simpler statement of a club's rules about its committees and their members, than appears in the formal club rules. Birkhoff and MacLane[7]

[2] Palmer O. Johnson, *Statistical Methods in Research,* Prentice-Hall, 1949, p. 91.

[3] G. U. Yule and M. G. Kendall, *An Introduction to the Theory of Statistics,* Griffin, 1940, pp. 422-423. For contingency tables of 40 or fewer cases, see the tables of E. Federighi, "The Use of Chi-square in Small Samples", *Amer. Sociological Rev.,* December, 1950, pp. 777-779.

[4] Franz Adler, "Yates Correction", *Jour. Amer. Statistical Assn.,* December, 1951, pp. 490-501, and "Yates Correction . . .", *Ibid.,* pp. 303-304, by E. L. Crow; also any recent text on statistical method, such as those of Hagood and Price, Dixon and Massey, and Snedecor.

[5] Developed 100 years ago by George Boole, an English mathematician, providing much of the basis of modern symbolic logic. See George Boole, *Studies in Logic and Probability,* Watts & Co., London, 1952.

[6] Edmund C. Berkeley, "The Algebra of States and Events". *Scientific Monthly,* April, 1954, pp. 232-242.

[7] Garrett Birkhoff and Saunders Mac Lean, *A Survey of Modern Algebra,* revised edition, Macmillan, 1953, p. 347.

show how an inconsistency in the numerical classification of 1,000 employees of a cotton mill by color, marital condition and sex, is detected.

It is sometimes difficult to decide on the evidence available as to the class to which some cases belong. There may be several attributes relevant to the classification of an individual case, and the research student must decide whether case X belongs in Class A or in Class B. Obviously if the decision is wrong, so that X is placed in Class A, when it really belongs in Class B, then the frequencies in the cells of the table are not independent for a valid use of Chi-square as a test of the independence of the sets of classification which we depend on for our explanation of the phenomena we have under analysis. Evidently this is a problem of considerable scientific importance, and some of the leading minds in mathematical statistics have given it systematic attention and exploration.[8] The result has been the development of the method of discriminatory analysis, usually in the form of the linear discriminant function (LDF), which makes the assumptions of normality of distributions and linearity of inter-correlations. It should be apparent that the LDF method of analysis is analogous in some respects to the multiple regression equation of classical statistics. The chief point of difference between the two is in the nature of the criterion, which in the LDF is qualitative (expressed as a dichotomy) rather than quantitative as in the multiple regression equation. Palmer O. Johnson[9] gives an example to show how the LDF enabled him to assign an individual student to Physics 1, rather than to Physics 7, a more advanced course, on the basis of three measurements on each individual. The method has been used in problems where there are many more measures than three—Mahalanobis, Majundar and Rao used it on 22 groups with 12 variables.

Since the relationship between the LDF and common factor analysis has been fully discussed in the last two references and in the sources cited therein, and also since the use of factor analysis on social data has been illustrated in recent publications by such sociologists as L. Guttman, P. Lazarsfeld, W. H. Sewell, R. F. Sletto, R. F. Winch, and others, we make no attempt here to discuss factor analysis, assuming that the reader is familiar with these sources and publications and with any new developments and applications of this now familiar method. Also it is not our purpose to

[8] An excellent historical account of the origin and blending of several approaches to the solution of this problem appears in *Project Reports* of the U.S. Air Force's School of Aviation Medicine, numbers 1 to 6, 1950-1951, especially *Report 1*, by Joseph L. Hodges.

[9] Johnson, *op. cit.*, pp. 343-353.

discuss the methodological problems of sociometric scale construction, since such methods are described in the available texts on methods of social research.

Before passing on to the next topic it may be helpful to note an example of Rao's[10] use of the LDF in connection with the generalized distance function (D^2). In this study he was concerned not only with the specification of an individual as a member of one of many groups to which he could belong, but also to classify the groups themselves into some significant system based on the configuration of the various characteristics. The problem involved arriving at constellations of groups of groups such that any two groups of a constellation are in a sense closer to each other than any two belonging to different constellations. Applying this method to 12 measured characteristics of about 4,000 Indians in 22 groups, he discovered two distinct clusters, one of tribal groups, and the other of general groups; and in tribal groups, sub-clusterings were revealed.

Unfortunately for the social scientist many data of psycho-social measurements fail to conform to the conditions of the normal distribution and to the condition of linear correlations.[11] It is, therefore, fortunate that beginnings have appeared for a non-parametric discriminant function. Fix and Hodges[12] have developed a method of discriminatory analysis freed from these restrictions of normality and linearity. We regret that we have not found an example of the application of this new method to social data, although we believe that it holds forth considerable promise.

Experimental Designs and the Analysis of Variance

Application of Fisher's analysis of variance[13] has a long history of successful use in biometrics, but has only recently been applied in sociological research. This lag is due in part to the lack of acquaintance with the method, since many quantitative sociologists were trained in classical statistics rather

[10] C. Radhakrishna Rao, "The Utilization of Multiple Measurements in Problems of Biological Classification", *Jour. Royal Statistical Society*, Series B (methodological), 1948-1949.

[11] See revised edition, 1955, of *Experimental Designs in Sociological Research*, by F. Stuart Chapin, pp. 193, 202, Harper & Brothers.

[12] Evelyn Fix and J. L. Hodges, Jr., "Discriminatory Analysis:—Non-parametric Discrimination; Consistency Properties", *Report No. 4*, Project No. 21-49-004, U. S. Air Force School of Aviation Medicine, February, 1951.

[13] R. A. Fisher, *Statistical Methods for Research Workers*, Oliver & Boyd, 1925; and *The Design of Experiments*, Oliver & Boyd, 5th ed., 1949. W. B. Cochran and Gertrude Cox, in *Experimental Designs*, Wiley, 1950, report 150 designs.

than in modern statistics,[14] and in part to scepticism of the validity of applying the method to data which frequently fail to conform to the conditions upon which the method is based. The latter was the reason for not using analysis of variance in the original (1947) edition of my *Experimental Designs in Sociological Research,* as is fully explained in Chapter VIII of the 1955 edition.

In general, there are four assumptions which underlie valid use of analysis of variance: first, cases are randomly assigned to groups, classes or plots to be analyzed; second, the measures are normally distributed; third, the variances of the data in the cells (groups, classes, plots) are equal or approach equality, i.e. they are homoscedastic; and fourth, inter-correlations among the measures are linear. Now it is a matter of common experience that many social and psychological data, measures of psycho-social traits, fail to meet one or more of these restrictions. Nevertheless, as is shown by Churchill, Cochran and Bartlett,[15] some margin of departure from these conditions is allowable in practice without very serious damage to inference; but it is not always evident just where the line should be drawn for social data if valid use of the method is to be made.

Since the non-parametric methods, presently to be cited, remove the last three restrictions, it may be helpful to indicate one device which can overcome the usual obstacles (ideological, moral and legal) to randomization of human cases in a free community situation. The following paragraphs, reproduced from our 1950 note in *Science,*[16] state the problem of the difficulties surrounding application of random selection of cases. They offer a resolution widely applicable to research problems other than those of housing experiments, which are taken merely as a specific illustration of the method.

When the sociologist attempts to apply an experimental design to meas-

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[14] Enthusiastic social statisticians of the modern school will find that even in biology there are scientists who question the value of statistical refinements, as compared to the scientific value of thorough knowledge of the organism. See R. E. Blackwelder and L. E. Hoyme, "Statistics, Experiment, and the Future of Biology", *Scientific Monthly,* April, 1955, pp. 225-229; especially pp. 228-229. This same point we have reiterated time and again in *Experimental Designs in Sociological Research,* both 1947 edition, and revised edition of 1955, pp. 37-39, 104-107, 110-111 footnote no. 17. The point is that no amount of skill in statistical refinements of analysis can compensate for lack of thorough knowledge of how the data were constructed and collected.

[15] *Biometrics,* March, 1947.

[16] "Research Note on Randomization in a Social Experiment", *Science,* December 22, 1950, p. 700, by F. Stuart Chapin; also pp. 194-195, revised edition of Chapin's *Experimental Designs, op. cit.*

ure the effects of some social program of treatment, such as a public housing program in the free community situation, two obstacles to generalization of results are encountered: (1) the selection of slum families for an experimental group to receive treatment and a control group denied this treatment (admission to the public housing project) cannot ordinarily be randomized, because administrative rules always require that families to be admitted to the project must be the *most needy;* and (2) during the experimental period of 1-5 years, there are losses of cases due to death, mobility, etc., which would destroy any randomization at the terminal date. In one study of this problem these losses of cases due to death, illness, mobility, refusals, etc., amounted to 12% of the experimental group of slum families admitted to the housing project, and to 42.7% of the families in a matched control group remaining in the slum for the 1-year run of the study. The following design of experimental study would obviate the first difficulty.

The operations would be: (1) take a housing project of limited accommodations, say, 500 dwelling units; (2) build up a pool of 1,000-1,500 eligible and processed families who could be admitted; (3) explain to applicants for admission to the housing project that the limited accommodations require that applicant families draw lots for admission (randomization); (4) then the families that drew lucky numbers will be admitted; and (5) the families that drew unlucky numbers will have to wait their turn as further construction opens up new projects. These rejected families become the control group remaining in slum conditions. In this manner favoritism and bias in admission would be avoided and yet randomization would be obtained. Both groups would be measured for adjustment at the beginning of the experiment, followed through an experimental period of 1-5 years, and then measured for adjustment at the terminal date.

The second dilemma is loss of cases from death, illness, mobility, refusals, etc., during the run of the experiment, thus destroying the initial randomization.

Leads to the resolution of this second dilemma of "lost cases" which destroy randomization when the terminal measurements are made, will be found[17] in Fisher's method of dealing with "missing values", Rao's account

[17] R. A. Fisher, *The Design of Experiments,* pp. 175-181, Palmer O. Johnson, *op. cit.,* pp. 105-107; C. Radhakrishna Rao, "General Methods of Analysis for Incomplete Block Designs", *Jour. Amer. Statistical Assn.,* December, 1947, pp. 541-641; R. C. Bose and T. Shemamoto, "Classification and Analysis of Partially Incomplete Block Designs in Two Associated Classes", *Ibid.,* June, 1952, pp. 151-184; and Alfred Politz and Willard Simmons, "An Attempt to get 'Not at Homes' into the Sample Without Callbacks", *Ibid.,* March, 1949, pp. 9-31.

of dealing with "missing plots" in incomplete block designs, and Politz and Simmons' procedures to obtain information about "not at homes" without call-backs, etc.

Returning now to the problem of removing the last three restrictions to valid application of the method of analysis of variance to the data of social experiments in the free community situation, there are now available some methods of non-parametric analysis of variance. Friedman[18] in 1937, developed a distribution-free method, χ^2_r, using Chi-square and rank order correlation, which yielded results close to the results of regular analysis of variance on the same data for observations in two or more classes or groups of classification. Kruskal and Wallis[19] have more recently developed the H-test for one-criterion analysis of variance by a distribution-free method, using Chi-square, and obtained results similar to the results of regular analysis of variance on the same data. No doubt other methods will presently be developed, so that the outlook is promising for using this powerful tool of analysis on social data. In the revised edition of our *Experimental Designs in Sociological Research* (1955), these two methods of Friedman and of Kruskal-Wallis were applied to some of the data of the original results obtained by use of the t-statistic, but without the restrictions of analysis of variance or of the t-statistic.

A new distribution-free method has recently been devised by Sol Haberman,[20] of The Census Bureau. This method starts from partially ordered systems of expectations (the hypothesis to be tested), and, by use of the logic of permutations and combinations in a geometrical frame of reference, provides new probability tables for estimating the occurrence in chance of observed departures from expectations. The statistic used is the number of interchanges required to bring the observed order into correspondence with the expected order of occurrence. The method derives from distributions of M. G. Kendall's Tau (τ) on partially ordered systems, and is in the nature of a "goodness of fit" approach. It is adapted for use in problems of experimental design in which "before" and "after" measurements, or comparisons of an experimental group with a control group, are made. It is adapted for use in problems where the data are expressed in dichotomies, trichotomies,

[18] M. Friedman, "The Use of Ranks to Avoid the Assumptions of Normality Implicit in the Analysis of Variance". *Ibid.*, December, 1937, pp. 675-701.

[19] W. H. Kruskal and W. A. Wallis, "The Use of Ranks in One-Criterion Analysis of Variance", *Ibid.*, December, 1952, pp. 583-621.

[20] Sol Haberman, "Distributions of Kendall's Tau based on partially ordered Systems", *Biometrika*, vol. 42, parts 3 & 4, December, 1955.

etc. It appears to have fewer restrictions than some of the other non-parametric methods and yet yields probability estimates with no assumption of normality. It may be applied to small random samples[21] and there are special probability tables for even non-random samples.[22] We have applied this method to some of the data of the 1947 edition of my *Experimental Designs* where the t-statistic had formerly been used, with results similar to those when the t-statistic was used. The efficiency of this S-test of Haberman has not yet been determined,[23] whereas the efficiencies of the χ^2_r-test of Friedman and the H-test of Kruskal-Wallis are described in their studies. In general, the non-parametric tests for analysis of variance are less efficient than regular analysis of variance, since rank orders are substituted for actual measurements.

It seems likely that stochastic difference equations may provide systematic aid in the case of "ex post facto" or longitudinal experimental designs with human subjects. This method may be adapted to take account of time lag factors. Marshall[24] makes an application of this method to determine whether the age of onset of a certain disease is stochastically larger for those cases with a negative family history than the age of onset of those cases with a positive family history, and finds "that it is very unlikely that the two groups of patients have the same distribution of age of onset and tentatively accept the alternative hypothesis that the age of onset is stochastically larger (older) for persons with a negative family history than for persons with a positive family history". The computations lead to rejection of the null hypothesis at the 5 per cent level. For the total of 2,502 cases dealt with, a range of nine age of onset classes are used in his study. Thus a dichotomy of positive or negative family histories is arranged by age of onset of the disease and we have two series of observations by time

[21] F. Stuart Chapin, *Experimental Designs in Sociological Research*, revised edition, Harper & Brothers, 1955, pp. 284-285.

[22] Tables in *Biometrika, Ibid.*

[23] Efficiency is used here in the statistical meaning, ". . . A statistic which has a variance smaller than any other estimate of the same population parameter is called an *efficient* estimate. This is *statistical efficiency*. The relative efficiency of another estimate can be measured by dividing its variance into the variance of the efficient estimate. This quotient is called the efficiency E of the estimate. The efficiency of all estimates other than the efficient estimates will then be less than 1 . . .", W. J. Dixon and F. J. Massey, Jr., *Introduction to Statistical Analysis*, McGraw-Hill, 1951, p. 228.

[24] A. W. Marshall, "A Large-Sample Test of the Hypothesis that One of Two Random Variables is Stochastically Larger than the Other", *Jour. Amer. Statistical Assn.*, September, 1951, pp. 336-374. For the matter of time lag, see Chapin, *op. cit.*, pp. 244-245.

intervals to compare for evidence of differences between frequencies with probabilities of chance occurrence as a frame of reference for evaluation of the observed differences.

Extreme Value Theory

Social scientists are often interested in the behavior of extreme individuals: the juvenile delinquent, the criminal, the psychotic, the genius, the leader, etc. They are also interested in group behavior: the extreme participation rates of leaders; the disloyal members of small groups who weaken group cohesion; committee saboteurs; fatigue and lowered group morale, etc.

Extreme value theory[25] is a relatively new development in statistical method which may offer leads to newer devices of analysis of problems which have often baffled the social scientist. Emil J. Gumbel, an industrial engineer, besides his own contributions to extreme value theory, has compiled a list of 78 titles of articles dealing with various aspects of the subject. Of these titles, 45 were published between 1940 and 1954, and 24 in the period 1920 to 1939. Concentration on the normal distribution as a model, and on mass phenomena as the central area of research interest, has been to the neglect of the problem of sets of extreme values. Here the *mode* of extreme cases, rather than the mean, becomes one of the parameters, so that under certain conditions there exist asymptotic distributions of extremes, with skewed curves as models. Small sample applications have been worked out.[26] Thus far the application of extreme value statistical method is illustrated in studies of floods, droughts, gusts of largest strength of winds, and quality control, to mention a few. However, another kind of problem, closer to the immediate interests of the social scientist, namely the oldest ages at death of human beings, has also been investigated.[27] We know of no application of the method yet made to the data of extreme cases in the field of group dynamics. Nevertheless we mention extreme value theory and method because in our opinion it may well be adapted to problems of research on human behavior. Finally, there seems as yet, no non-parametric development of the method.

[25] Emil J. Gumbel and Julius Lieblein, "Some Applications of Extreme-Value Theory", *The American Statistician,* December, 1954, pp. 14-17, a publication of the American Statistical Association; also, E. J. Gumbel, *Statistical Theory of Extreme Values and Some Practical Applications,* U. S. Department of Commerce, National Bureau of Standards, *Applied Mathematics Series, # 33,* pp. 49.

[26] Julius Lieblein, *A New Method of Analyzing Extreme-Value Data,* National Advisory Committee for Aeronautics, Washington, D. C., January, 1954.

[27] Gumbel, *op. cit.,* # 33, pp. 6-7, 42-43.

PART VI

REVIEWS AND SURVEYS

SPECIAL REVIEW OF "SOCIOLOGICAL STUDIES IN SCALE ANALYSIS"[1]

FRED L. STRODTBECK

In the book under review the authors and their collaborators join Stouffer, Suchman and others who have built upon the bright genius of Louis Guttman. In the early 1940's Louis Guttman expressed a research doctrine that according to the lights of the day was psychometric heresy. He argued that social scientists should turn to a concern with the position of an attitude in an attitude universe rather than the correspondence between an attitude and some external behavior. If item responses could be shown to have the required parallelogram pattern, then the items could be shown to be unidimensional. A few such items used in a scale would have the highly efficient characteristic that a response pattern could be re-created from the scale position—after the internal relationships were established, relations to external criteria could, if the investigator insisted, be considered.

Guttman suggested that scaling was a general procedure for dealing with "qualitative" data. He gave wide ranging illustrations. A few scattered examples of the scaling of state legal practices have appeared but most of the workers at Harvard and Cornell who have followed Guttman's techniques have applied them to increasingly diverse attitude fields. In their effort to work with items less like, Are you under seven feet tall?, Are you under six feet tall?, etc., a wide variety of items have been brought together in scales. However, since the shorter a scale the greater the opportunity of finding a combination of "cuts" which will fit the specified pattern, the scales have come to be composed of fewer items that Guttman typically used in the *American Soldier*. Stouffer's H-technique, reprinted in the present book is a highly sophisticated "information utilizing" way to inspect the possible cuts in response pattern and hence produce "unidimensionality" with greater certainty.

The hope that nurtured the early interest in scaling is in some quarters beginning to wane. Investigator A's unidimensional scale doesn't appear to have much appeal for investigator B. The prospect that a scale, derived from questioning a few hundred, would ultimately be applied to many thousand (with the consequent economy of asking fewer questions of the larger

[1] By Matilda White Riley, John W. Riley, Jr., and Jackson Toby. New Brunswick, N. J.: Rutgers University Press, 1954. Pp. xii + 433. $6.00.

sample) has materialized only frequently enough to keep this rationalization current. The questions which have been asked of the smaller samples and rejected because they didn't scale must be weighed in the information balance opposite whatever economies have occurred. Insofar as it might have been thought that solid kernels could be winnowed from poorly conceptualized question batteries by scaling, the picture has now changed. Scaling is not now expected to add greatly to the material to which it is applied. The fact that no conceptual structure has risen from a foundation of separate Guttman scales is, of course, a fault of scale-makers, not scaling.

Lest this seem to be too pessimistic an introduction to the review at hand, one must admit that as an easily explained system there is a certain beauty to Guttman's model. Almost like a machine in an Artzybasheff drawing, one can see the Guttman model ingesting a universe of items, rejecting most, but ordering a few which maintain their ordered relations even under the challenge of quite different subject populations. Can this scaling machine be turned to social data of firmer fiber? Can the interrelations of persons as revealed by Moreno's sociometric techniques be viewed as a response universe and scaled?

The authors approach this question with primer-simple examples. First we are introduced to the concept of a *collective scale, i.e.,* a scale which orders different groups along a continuum. Some scout groups have sung and gathered wood; others have gathered wood and some have done neither—but singing without wood-gathering is absent. The collective scale must be mentioned first for two reasons. It constitutes a higher order of classification which can be applied to groups which have otherwise been classified in the other types of scales which the authors introduce. In addition, this specific notice of the interactional boundaries which define a group touches the central theme of the authors' concern for social collectivities. It is one key to their use of "sociological" along with "scaling" in their title.

The authors' second scale, the *object* scale, moves directly into the social interrelationships in groups. Does A discuss sex with B, movies with B, both or neither? There are sequences of such behavior which occur with the magic parallelogram pattern. With Guttman the columns were attitude items and the rows were people—now both the rows and columns are people. The respondents are the *subjects* (from) and the *objects* (to).

The authors' subject-object tables do not have the sprawling, missing tooth character of the old, sans main-diagonal, socio-matrix. Compression is achieved by first making a subject scale. The subject gets a plus if he talks to more than X percent about the most intimate, the second most intimate,

etc., behavior. Hence with four items there are five classes of subjects. Correspondingly, a subject receives a plus if he is talked to by more than X percent for each of the behaviors in question. There's a slight, up-stream drift, top people are talked to by more people than they in turn address. A cross-tabulation of the two scales shows a concentration parallel to the main diagonal with light frequencies in the minor diagonal ends.

This early chapter on subject-object scales is highly original and deserves the serious attention of all readers but it is also marked by decisions which to me are troublesome and which continue to be troublesome throughout the remainder of the book. First the data are not presented for their intrinsic importance. They are to illustrate a method. In biometric journals the authors always take pride in their data as well as their methods. I believe sociologists should also.

The authors also recognize that the scales they juxtapose are not perfect scales, but they suggest that better scales could be found. The thought, by analogy with the universe of attitudes, is that there is a universe of social interbehaviors. These interbehaviors can be sorted through by use of the scaling machine and finally a set will emerge which is "unidimensional". As sociologists, why are the authors interested only in those interbehaviors which follow the Guttman pattern? One doesn't know what percentage of possible interbehaviors will scale, and the case for laying aside the old biometric objective of describing the between persons distribution of each interbehavior investigated is not at all clear. Guttman scaling has become so mechanical that it is not as suggestive of new insights as are more conventional analyses of attribute data. So, while there may be little of value in a mound of discarded attitude items, it is the reviewer's belief that a mound of non-scaling social interbehaviors will assay much higher.

Finally, the authors indicate that a part of the Rutgers method is to always report a "coefficient of reproducibility by chance". This measure is obtained as follows: The original items are assumed to be uncorrelated, hence the eventual patterns are proportional to the original marginal totals. Some perfect scale types and some non-scale types are generated in this way. A coefficient of reproducibility is then computed in the usual way.

If this measure is computed, what is the objective? The authors suggest that when the C of R by chance is high, the C of R should be higher if the investigator is to accept his results as scaling (p. 84). This comment suggests a further use of the C of R by chance. In Table 1, the authors' computations for the C of R by chance from p. 318-19 based upon the Object Scale, Table 26, p. 90 have been copied down. Using the same marginal frequencies to

TABLE 1

FIT OF CHANCE MODEL AND GUTTMAN MODEL TO RESPONSE PATTERNS OF THE OBJECT SCALE OF COMMUNICATIONS (*Scale Analysis*, p. 90)

Response Pattern	Observed		Chance		Guttman	Chi Square: $(C-O)^2/O$	Chi Square: $(G-O)^2/O$
+ + + + +	13		1.54		26		
+ + + + −	0	(14)	.65	(3.82)	—		
+ + + − +	1		1.14		—	7.40	10.29
+ + + − −	0		.49		—		
+ + − + +	3		1.86		—		
+ + − + −	0		.78		—		6.00
+ + − − +	0	(6)	1.30	(9.09)	—	1.59	
+ + − − −	0		.58		—		
+ − + + +	3		3.21		—		
+ − + + −	0		1.36		—		
+ − + − +	2		2.38		—		
+ − + − −	0		1.01		—		
+ − − + +	2	(6)	3.88	(13.00)	—		
+ − − + −	0		1.64		—	8.17	6.00
+ − − − +	1		2.87		—		
+ − − − −	1		1.22		—		
− + + + +	19		7.22		22		
− + + + −	0	(19)	3.06	(17.90)	—	0.06	0.47
− + + − +	0		5.36		—		
− + + − −	0		2.26		—		
− + − + +	7		8.75		—		
− + − + −	0	(12)	3.70	(21.67)	—	7.79	12.00
− + − − +	4		6.48		—		
− + − − −	1		2.74		—		
− − + + +	15		15.07		19	0.00	1.07
− − + + −	6		6.38		—	0.02	6.00
− − + − +	7	(8)	11.16	(15.88)	—	7.76	8.00
− − + − −	1		4.72		—		
− − − + +	13	(17)	18.20	(25.90)	18		
− − − + −	4		7.70		—	4.66	0.06
− − − − +	14		13.50		19	0.02	1.79
− − − − −	31		5.71		44	20.63	5.45
Total	148		147.91		148	58.10	57.13

compute the expected by the Guttman model, it is possible to ask: Are there grounds for believing that the observed frequencies are fitted by *either* the "chance" or Guttman model? Small adjacent frequencies are collapsed, chi square is computed, and the answer is, unfortunately, no! Observed departures are excessive in each case.

If neither "chance" nor the Guttman model fits, next steps are not entirely clear. The authors may feel that the proposed chi square criterion is too stringent. There is no particular precedent for looking at Guttman data in this way, so the authors may never have faced the dilemma just as the reviewer sees it. It is highly probable that a Lazarsfeld latent distance scale could be more closely fitted to their observed data than either the "chance" or Guttman model, but this would not lead so directly to the consideration of the higher components of Guttman scales treated in later chapters. In this connection, it appears that the authors, in their pioneering application of Guttman scaling to new areas, have become tangled in unsolved problems of goodness of fit which have been previously recognized in the applications of Guttman scaling to the attitude field?

In Chapter V the authors equate consensus in object scales (*i.e.*, responses occurring with a frequency beyond the third and below the first quartile) with attitude *intensity* of the Guttman-Suchman variety. Unfortunately, given the way their questions have been formulated, they must use a method called the foldover technique. The same responses are used for both scale positions and the consensus measure. Suchman, at least, has given only the most limited endorsement (see the *American Soldier*, IV, p. 253) to this operation, and its use is not clearly legitimated. The problem arises because it is possible to conceive of distributions of data in which the intermediate objects, rather than the high or low ranking ones, would be the objects concerning which the group has the greatest consensus. If such distributions were found, no U distribution from a plot of scale position and consensus would result. When the authors suggest that whether or not a U-shaped curve exists is "a matter of empirical test" (p. 96) they create a mind set which suggests that if it does exist, then there is additional evidence to cause one to believe that a further convergence with Guttman's theory is possible. Cohn, in a note at the end of the chapter is more cautious on this point and properly indicates that the question of the possible artifactitiousness of the operation should be separated from the possible correspondence to Guttman's higher component theory. It is the reviewer's cautious opinion that an investigator using the foldover technique and data involving number of mentions, like the authors, would have a more publish-

able article if he found a negative case than if he confirmed the U distribution.

The higher components issue has been put as tersely as possible by Bert Green in his comment upon Guttman scaling in the *Handbook of Social Psychology* (p. 358):

> There may be many interesting characteristics of attitudes, such as clarity, specificity, intensity, closure, involution, etc. Perhaps some of these characteristics will have several inflection points, and hence correspond with one of the higher components. If so, the correspondence will be entirely fortuitous. . . .

In such a statement the issues are clearly joined for the authors (and Guttman?) plainly do not believe that principal components, sets of orthogonal scores which might be used as item weights which are ordered by their decreasing contribution to the variance, have the fortuitous correspondance to socio-psychological dimensions suggested by Green. The authors position has two aspects. First, they appear to grant that psychological meaning for some of the higher components have been established in attitude content scales. They then proceed open-mindedly to inspect their data for higher component analogues in object scales.

In the authors search of their data for analogues to the higher components they have occasion to make many stimulating observations. Their discussion of reputation as an articulating concept for relating the culture and social structure of a group is an instance in point. The authors discussion of dyads and their demonstration of the way in which dyadic relationships may be compressed by means of object scales has a firm claim to the attention of all who work with such data. Woven into these middle chapters are considerations of the parallel between the methodological operations and certain theoretical considerations growing from the work of Durkheim, Parsons and others. Creative teachers will use this material to relate courses which co-exist in most departments in unfortunate, but splendid, isolation.

For readers who have read Volume IV of the *American Soldier*, but still have not gotten their scaling machine to run smoothly, Part IV of the present volume is required reading. Given the alpha and the H technique, the life of a scale-maker becomes almost as certain as that of a demographer.

The authors suggest (p. 41) that larger samples of more recently collected data of the sort used illustratively in their book are now on hand. As they move to the analysis of these data the authors will have firmly in hand the answer to the question, "What does the Guttman model as it is presently

explicated offer sociologists working with group interbehavioral data?" Readers will undoubtedly profit from the inventiveness and fresh perspective of this book, but it also carries another important message. There are many more models to be systematically considered: Lazarsfeld's; conventional psychometrics; bio-assay techniques (the death or non-death of a fruit fly is in the Guttman sense "qualitative"); and stochastic models. These authors have come to know the adolescent societies which produce the primitive data to be analyzed—their job is now to ask the questions and pick the analytic model which represents the functioning of these societies most faithfully. So it is for every sociologist. When more books, like the present one, have probed other methods of analysis, the sociologist will be in a stronger position to make wisely his choice of an analytic method.

COMMENT ON STRODTBECK'S REVIEW OF "SCALE ANALYSIS"

JOHN AND MATILDA RILEY, RICHARD COHN, JACKSON TOBY

Dr. Moreno has asked us to write a reply to the foregoing review. Since we should like to be counted among those who pay tribute to the founder of SOCIOMETRY in this the last issue to be edited and published by him, we agreed to write this note—only in small part as a response to the reviewer, though it may perhaps serve to reinforce some of his major points.

We should like primarily to indicate the niche where we now feel this volume belongs in the growing edifice of sociological research method. Abbott Ferris sums this up better than we ourselves have done, when he writes in an earlier review in *Social Forces:*

> "To study groups adequately we need group measures which are not merely the mean and variance of individual traits and responses, but instead represent a pattern of relationships within the group which has sociological relevance in analysis. Here is one approach to that problem."

The sociological researcher is beset by special problems since he views the group as composed of interacting individuals. He wants to take into account that these individuals do not compose a mere statistical aggregate, that their several roles are interdependent. But how can he translate this conception into the language of empirical research?

Crucial pioneering steps have been taken. Moreno has developed pro-

cedures to uncover the network of affective interpersonal bonds. Research on interpersonal perception is forging ahead through the work of Bruner, Tagiuri and others. Bales, Strodtbeck, Borgatta, and their cohorts are gradually developing means to reveal the process underlying interaction in small groups, while Lewin's followers continue to apply his promising methods of experimentation. The work of these and many other researchers has laid the groundwork. But much remains to be done.

Among these remaining tasks is that of fitting together data about individuals so that the combined data will represent the collective pattern for the group. Here a special problem arises because the roles of the several group members are to a certain extent similar and to a certain extent differentiated—a point which is stressed in such theoretical work as that of Durkheim and Weber and, more recently, of Parsons. On the empirical level, the problem may be put something like this: If a group member, "A", holds a certain value, while another member of the same group, "B", espouses a different value, how can we test for the possible interdependence of the two? (Incidentally, this is close to the problem currently being dealt with by such scholars as Merton and Lazarsfeld at Columbia and Newcomb at Michigan.) Merely to count up the number of group members who are alike on any given item would provide some measure of the similarity, but it would not indicate the differentiation. Where division of labor exists, how can we represent the fact that, while different individuals are performing different tasks, these tasks are all integrated with one another? Or, if the members of a group are found to hold a variety of apparently disparate attitudes toward one another, how can we discover that these fit together into a pattern of interlocking role relationships? For such cases, a model must apparently meet at least two requirements: it must make use of several different items to refer to the different types of contributions which are made to the group pattern, and it must contain some test of the integration, or fitting together, of these differential contributions.

The Rutgers Research Group made use of the Guttman scale because it seemed to meet these two criteria. We used it deliberately to isolate certain situations in which the collective attitudes or action did form a pattern: in which the communications of the group members followed a given sequence of topics, for example, or the conferring of status occurred in successive stages of liking, admiring, and following. We did this deliberately, partly because one of our objectives was to experiment with representing such situations empirically. We did this also because our second objective was to probe further into such situations, to discover who contributes what to the collective

pattern, to investigate the process by which concerted or differentiated action takes place.

It is this second objective which, it seems to us, relates centrally to one of the prime tasks of the sociologist. This is the subject of Part Three of *Scale Analysis*, which consists of an attempt to examine the role structure of the group by identifying each group member and observing, with reference to the action under study, the relational bonds between him and the other individuals in the group. This analysis, which we have designated as the "post-analysis" of a collective scale pattern (in contrast to the pre-analysis which is required in preparing collective data for scaling) is applied because the array of data are held, in the words of Parsons and Shils, to refer to a "system of motivated acts organized about the relations of actors to each other." The effort here is to examine the social structure, not primarily to understand more clearly the motivations or gratifications of the members *qua* individuals, but rather to seek for the interrelationships among these members; to show, for instance, that members of the same family tend to vote alike (or differently), that friends who like each other tend to confide in each other, and so on. The focus is sociological or interpersonal.

It is at this point that we should like to underscore the denouement of the foregoing review: the Guttman scale is by no means the only model useful in fitting together individual data which refer to the group. In fact, our own experience indicated a number of inadequacies of this particular model. For one thing, it fits only that situation which is ordinarily described as "cumulative". Other models, such as latent structure analysis or image analysis as described in the book, may be appropriate for other types of situations. Still more importantly, the scale tests only for the interdependence of the various acts or attitudes of the collective individuals; it does not reveal the organization among the group members who perform these acts. It did not, for example, enable us to determine whether or not any given pattern of action rested upon a division of labor in the group. Consequently, in Part Three, we attempted to supplement the scale by other procedures. It is our hope that these steps, taken with the tools which were available, may serve to stimulate further sociological application of existing tools and the development of new and still better procedures.

Finally, one technical point does perhaps warrant a "reply" for the record. Strodtbeck, after applying a chi square test, suggests that the scale data may, in fact, fit neither the Guttman model nor the "chance" model which we have made use of throughout the book. We think, however, that, while this possibility must be taken into account, it can be excluded through

use of the Guttman criteria including the coefficient of reproducibility compared with the coefficient of reproducibility by "chance". These reproducibility measures show whether the distribution of the data in a given sample departs noticeably from the distribution that would appear in the case of statistically independent items and whether the departure, when it exists, is in the direction of a closer approach to scalability.

What is at issue is whether or not a scale furnishes a reasonably close model for a given set of data—there can be no question of statistical significance since even a single non-scale type is enough to prove a statistically significant departure from a perfect scale. We think the criteria given by Guttman form a good basis for a practical judgment on this issue. To these we have added the C of R by "chance", also found in principle in Guttman's writings, in order to be able to dispense with requirements on the marginals which are too restrictive for our purposes. We recognize that we have not given a precise criterion for the use of the C of R by "chance" and that there is ample room for a further study of this and perhaps of other criteria.

We believe, however, that the data which we have judged scalable on the basis of our criteria are so, in the sense that the scale is a useful model for the analysis of such data. Certainly it is possible that better models will be found in some cases (though these will probably have to be more complicated) and that better criteria might lead to the choice of another model where we have used scaling. In the case of our poorest scales the independent item model may be about as good as the scale model. It is still important for the researcher to know, however, that there is a decided departure from the independent item model, and that this departure is in the direction of scalability.

We do not see that any of these considerations are affected by the results of a computation of chi square. It is hard to see by what stardard one is to judge whether chi square is excessively large. The value of chi square which indicates a statistically significant difference is bound to be greatly exceeded when the sample size is large. For, as we have indicated, even the occasional occurrence of a single non-scale type is a departure from the scale model. Chi square becomes an increasingly sensitive test for such a departure as the sample size increases and must, for large enough samples, indicate a difference overwhelmingly greater than that required for statistical significance. The use of chi square thus involves precisely the same problem of selecting a criterion on the basis of practical judgment as is involved in the use of the C of R and the C of R by "chance". It seems to us that the C of R is a more natural measure of scalability than chi square and hence

easier to use for the purpose. It is, of course, possible, however, that a more detailed investigation will show advantages of chi square.

As a matter of fact the results of chi square computations seem to be in fair agreement with the C of R. In the case cited by the reviewer both the chi square test and the C's of R indicate that the observed data are about equally remote from the scale model and the independent item model. When we test a better scale (given on page 92 of *Scale Analysis*) a C of R of 97% as compared to a "chance" C of R of 89% indicates that the observed data are much closer to the scale model than to the independent item model. This agrees with the chi square values, which are respectively 41 and 162.

SOCIOMETRY IN FRANCE

ANNE ANCELIN SCHUTZENBERGER

The growth of sociometry in France is clearly connected with the pioneering efforts of several scientists. Due to the work of M. P. Schutzenberger (lectures, papers, research since 1947), Paul H. Maucorps (*Psychologie des Mouvements Sociaux,* 1950), Jean Maisonneuve (*Psychologie Sociale,* 1955), basic principles of sociometry have become well known in the country. But foremost, the contributions of Georges Gurvitch must be mentioned. A theoretician of micro-sociology and sociometry, Gurvitch has been instrumental in helping to organize a Laboratory of Sociometry at the Sor-

Anzieu's research is oriented towards psychodrama and group psychotherapy (a report in print).

Pages and Dubost have been interested in non-directive techniques and in sociodrama as applied to industry.

The pilot studies of Anne Schutzenberger have proven correlations between high negative horizontal sociometric choices and demagogic leadership in groups (a report in print).

A. Moles has worked on structures in small groups of radio-listeners and concert populations (in print in Cahiers d'Etudes Radiophoniques). His research has contributed to (1) the measurement of the degree of complexity in a finite group, consisting of various social layers, by analysing data obtained about one of its configurations, and (2) the use of some theorems about mathematical fields. With large enough populations, the social atoms reduce to points and the social field tends to become continuous: the distance of various leaders to the bary-center of the vectoral fields ranks their relative importance. Moles has also (3) translated some of the communications circuits' terminology to uses in the analysis of social channels.

Juliette Favez-Boutonier, in research studies still in progress, has been dealing with the mechanisms of interactions and communications in emotionally neutral small groups, and especially with the content of their verbal behavior.

bonne in 1951—a research organization to be reopened now under the direction of Roger Bastide. The basic ideas of sociometry's founder, Jacob L. Moreno, have been introduced to France through the *Cahiers Internationaux de Sociologie*, edited by Georges Gurvitch.

Since 1947, elements of the theories of Jacob Moreno and Kurt Lewin have been taught at the French Universities—in part due to the creation of a Licence de Psychologie—by Gurvitch, Lagache, Stoetzel, Favez-Boutonier, Merleau-Ponty, Anzieu, Durandin and others.

Psychodrama and similar sociometric techniques have remained somewhat tentative with their users subject to frequent criticisms. Nevertheless, psychodrama has been employed increasingly. Gireille and Genevieve Monod started work with difficult children (upon Monod's return from the United States) at the Centre Medico-Pedagogique Claude Bernard. The Centre was opened in 1946-7 for Parisian high-school children under the direction of Juliette Favez-Boutonier and G. Mauco. Both the developments in Paris and Strassbourg have been associated with the activities of Anzieu, while Serge Lebovici has been active in therapeutic psychodrama among Parisian children in out-patient clinics. Paulette Kahn has studied sibling relationships in large families in, and around, Strassbourg. Bernard Arensburg has worked on the applications of psychoanalytic theories to Moreno's group therapeutic techniques.

Anne Ancelin Schutzenberger has pioneered in industrial sociodrama since her return from Moreno Institute in 1952. Her first work was devoted to problems of readaptation to work of semi-delinquent adolescents from the Parisian slums. Among the successes of this work at the Ecole du Travail but a few may be mentioned: damages regularly done to windows, light bulbs and equipment have been stopped; the apprentices have appeared better adjusted to their jobs. Next, sociodrama entered industry by salesmen and top-management training—this time connected with various private consulting firms in charge of the program.

Some public services (for example, Electricity Board training seminars associated with the Ministry of Labor), semi-public or private organizations (C.E.G.O.S.—S.N.E.C.M.A.) and various consulting firms (O.T.I.A.C., C.S.O.F., C.F.P. and others) have tried to use sociometry and sociodrama in industry but the lack of competent scientists in this highly specialized field has somewhat hampered its systematic development.

The recent founding of a French Institute of Sociometry and Social Sciences, informal thus far, is likely to help sociometry to take steps toward teaching of techniques of research and therapy on a wider scale.

FINAL WORD

As sociometry wanders now into the world, it becomes the responsibility of every reader that the new knowledge and wisdom is adequately used. The most important aspect of sociometry is its universality.

Advance will come from applying sociometric methods to all phases of social life regardless of consequences. In certain countries, sociometric methods may do their greatest service as therapeutic antidotes for an over conforming, regimented world; in other countries, they may affect the basic social institutions themselves and transform them into more elastic vehicles for living.

We share the hope with those who believe that sociometry and psychodrama will contribute towards a better understanding of the fraternity of nations and become an inherent part of the world culture.

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